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bliography on the Climate of Southeast Asia and the East Indies

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METEOROLOGICAL ABSTRACTS AND BIBLIOGRAPHY

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METEOROLOGICAL ABSTRACTS AND BIBLIOGRAPHY

MALCOLM RIGBY, Editor

Vol. 5 FEBRUARY, 1954 No. 2

SPECIAL FEATURE IN THIS ISSUE

A Selective Annotated Bibliography on the Climate of Southeast Asia and East Indies

(For complete table of contents see back cover)

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FOREWORD

Meteorological Abstracts and Bibliography is a monthly publication whose purpose is to bring to the attention of meteorologists current literature in their field and in related fields and to provide bibliographic information on various subjects, as interest demands.

Part I contains abstracts of current literature in the fields of meteorology, oceanography, etc., arranged according to the Universal Decimal Classification.

Part II of each issue comprises a special annotated bibliography of important references on a special subject. No attempt is made to prepare exhaustive bibliographies; instead, the aim is to include a representative cross section of the various aspects of a subject.

Bibliographies published in the successive issues of Vol. 1, 1950 were:

1) **Atmospheric Pollution,** 2) **Aerobiology,** 3) **Cloud Physics,** 4) **Hail,** 5) **Tornadoes,** 6) **Volcanic Dust,** 7) **Climatic Changes,** 8) **Thunderstorms,** 9) **Icing,** 10) **Acoustical Propagation** and 11) **Evaporation.**

Those published in Vol. II, 1951 were:

1) **Extended Forecasting,** 2) **Long Range Forecasting,** 3) **Soil Temperature,** 4) **Constants, Tables, etc.,** 5) **Climate of Near East,** 6) **Climate of Middle East,** 7) **Special Winds,** 8) **Radar Storm Detection,** 9) **Condensation Trails,** 10) **Climate of Northeast Africa** and 11) **Mountain Meteorology.**

Other bibliographies previously published were:

No.	Mo.	Vol. III, 1952	Vol. IV, 1953
1.	Jan.	**Climate—Northwest Africa**	**Turbulence Theory**
2.	Feb.	**Carbon Dioxide**	**Turbulent Diffusion and Exchange**
3.	March	**Climate—Argentina, etc.**	**Frost and Frost Forecasting**
4.	April	**Dew**	**Climate of Australia and New Zealand**
5.	May	**Objective Forecasting**	**High Level Winds (500–100 mb)**
6.	June	**Stratus Forecasting**	**High Level Winds (above 100 mb)**
7.	July	**Urban Climatology**	**Jet Stream**
8.	Aug.	**Climate—Central Africa**	**Radiation Bioclimatology**
9.	Sept.	**Visibility**	**Climatology of the Pacific**
10.	Oct.	**Glaze and Rime**	**Auroras**
11.	Nov.	**Free Air Turbulence**	**Sferics**

Bibliographies published this year are:

1. **General Oceanographic Meteorology,** Vol. V, No. 1, Jan. 1954
2. **Climate of Southeast Asia and Netherlands Indies,** Vol. V, No. 2, Feb. 1954

Forthcoming bibliographies will be:

3. **Physics of Auroras,** Vol. 5, No. 3, March 1954
4. **Tropopause,** Vol. 5, No. 4, April 1954

Other bibliographies in preparation are:

Actinometers
Arctic Meteorology
Balloons
Climate of the Arctic
Engineering Meteorology
Machine Methods in Meteorology
Microwave Propagation
Numerical Forecasting
Ozone
Radiation Data
Snow Cover
Synoptic Aerology
Tropical Cyclones
Wind Waves and Currents

Part III contains a listing of the contents of those journals which are primarily meteorological. These are published in the earliest issue where space permits.

Part IV is made up of author, subject and geographical indexes. In the December issue cumulative author, subject, geographical and journal indexes are published.

EXPLANATIONS

Location of material: For each entry, a symbol is given for at least one library where the material may be found. The Union List of Serials (Gregory) is the source of most of the symbols used. In some cases, where no symbol has been assigned to a library, one will be devised according to the principles of the Union List.

Library symbols used frequently may be found in the following list:

DA:	U. S. Dept. of Agriculture Library, Washington, D. C.
DBS:	U. S. Bureau of Standards Library, Washington, D. C.
DGS:	U. S. Geological Survey Library, Washington, D. C.
DLC:	Library of Congress, Washington, D. C.
DN-HO:	U. S. Navy Hydrographic Office Library, Suitland, Md.
DSG:	U. S. Army Medical Library, Washington, D. C.
DSI:	Smithsonian Institution Library, Washington, D. C.
DWB:	U. S. Weather Bureau Library, Washington, D. C.
GB-MO:	Great Britain, Meteorological Office Library, Harrow, England.
MH-BH:	Harvard University, Blue Hill Observatory (and American Meteorological Society) Library, Milton, Mass.
MWB:	Marine Biological Laboratory (depository for Woods Hole Oceanographic Institution), Woods Hole, Mass.
NN:	New York Public Library, New York, N. Y.
NNA:	American Geographical Society Library, New York, N. Y.

Other symbols:

*	before an entry indicates a good data source.
†	before an entry indicates a good bibliography.
!	before an entry indicates a synoptic case history study accompanied by charts.

Geographic locations are in the English form rather than the form used locally, for example, Moscow for Moskva.

Titles of articles or monographs are in the language of the original article unless otherwise stated. Slavic (Cyrillic) titles are transliterated into the Roman alphabet according to the Library of Congress transliteration scheme.

Abbreviations:

Titles of periodicals are not abbreviated, as a rule.

The months of the year from March to July are not abbreviated. Other months are abbreviated as Jan., Feb., Aug., Sept., Oct., Nov., and Dec.

The word or abbreviation for Volume (Tom, Band, Jahrgang, Año, etc.), for Number (Heft, Fascicule, Vypusk, etc.) and for page or pages is omitted from most entries. Thus an entry will read as follows:

Meteorologische Rundschau, 2(5/6):146–151, May/June 1950.

This indicates that the article appeared in *Meteorologische Rundschau*, *Jahrgang* 2 (Vol. 2), *Heft* 5/6 (No. 5/6), *pages* 146–151, May/June 1950.

PART I. ABSTRACTS OF CURRENT METEOROLOGICAL MATERIAL

WORKS OF SPECIAL INTEREST

5.2–1 551.582:63(431/5)

†*Filzer, Paul (*Tübingen*), **Die natürlichen Grundlagen des Pflanzenertrages in Mitteleuropa.** [Natural bases of plant yield in Middle Europe.] Stuttgart, E. Schweizerbartische Verlagsbuchhandlung, **1951.** 198 p. 25 figs. (some fold.), 35 tables, bibliog. p. 191–194. **DLC**—A substantial text in the field of agricultural climatology with particular reference to Germany and based on literature published in Germany from 1876 to 1950. The most important statistical studies in the relation between climate or climatic elements and crop production are digested and organized into a systematic outline giving the reader a good survey of the field. The plant growth element used the most often in statistical studies is TSP or "Trockensubstanz Produktion" (dry matter yield) or, in the case of trees or forests, the tree ring width. These parameters are related to rainfall, drought, insolation, ground water supply, density of vegetative cover, etc.; areal intercorrelations and changes from year to year are shown in tables, diagrams and on charts (for pre-war Germany). The factor to be used in obtaining the TSP for each different crop is given in the section on methodology. Grain crops are the chief type of plant growth used in these studies, probably because more data are available for them than for other vegetative types, but the author has attempted to relate the TSP for all types of vegetation (including the forests) in an area to rainfall. In many parts of Germany he gets a strongly negative relation which appears mysterious but which in fact is due to these areas being at or above an altitude where rainfall is the decisive factor—just as in the Arctic where temperature is more important than moisture. *Subject Headings:* **1. Agricultural climatology 2. Crop ecology 3. Drought effects 4. Germany.**—*M.R.*

5.2–2 551.5:63(02)(47)

Gaĭvoronskiĭ, I. I. and Petunin, I. M., **Kolkhoznaia agrometeorologicheskaia stantsiia.** [Agrometeorological stations on collective farms.] Moscow, Gos. Izdat., **1952.** 235 p. 111 figs. (some colored), form (fold.), 13 refs. **DLC**—A remarkably thorough treatise describing the stations, instruments and observations provided by the Hydrometeorological Service of the U.S.S.R. for the benefit of agriculture by means of a network of stations on the collective farms. In the first chapter the importance of a meteorological service for agriculture, etc. is discussed. The organization of an agrometeorological station, equipment necessary (very extensive, including about 100 items), books, tables, forms for recording each element, etc. occupy the second chapter. Solar radiation, soil and air temperature, soil and air humidity, clouds, precipitation, snow, evaporation, pressure and wind each constitute the subject of separate chapters which describe and illustrate all types of instruments used for measuring these elements, the importance of the elements for agriculture, methods of installation and care of instruments and recording observations, besides giving nomograms, scales and definitions of units, etc. Finally, the working up of self-recording instruments (thermo-, baro- and hygrographs), making phenological observations, observations on the status of crops and frost forecasting occupy the last 4 chapters of this handy manual. A sample of the comprehensive form for recording all of the above elements on a daily or 4 times daily basis, for 10 day periods, is attached. This form includes space for phenological, crop condition, soil moisture and temperature, and saturation deficit (air) data. Summaries are made for each 5-day, 10-day and 30-day period. *Subject Headings:* **1. Agricultural meteorology 2. Agro-meteorological stations 3. Agro-meteorological instruments 4. Collective farms 5. Handbooks 6. U.S.S.R.**—*M.R.*

5.2–3 551.58:612(02) 91

†Guddum, Leonard W. and Knowles, Harold L. (*Univ. of Florida*), **Our physical environment: a problem approach.** Boston, Houghton Mifflin, **1953.** 625 p. 211 figs., tables, bibliog. p. 609–615. **DWB**—Pt. II of this text on the astronomy and physico-chemical nature of the earth as it is man's dwelling place, entitled "Weather and climate" (p. 75–218) contains 10 chapters (8 to 17 inclusive) discussing the factors which most affect human life: (8) radiation and temperatures, (9) pressure and winds, (10) humidity and precipitation, (11) weather and air masses, (12) storms, (13) synoptic charts and forecasts, (14) climate and climatic controls, (15) West coast climates, (16) East coast and interior climates, (17) topographic influences and climatic zones or regions. Numerous questions for students to answer follow each chapter. *Subject Headings:* **1. Climate and environment 2. Geography 3. Textbooks.**—*M.R.*

5.2–4 551.5(02) 551.58(02)

†Hare, F. Kenneth, **The restless atmosphere.** London, Hutchinson's Univ. Library, **1953.** 192 p. 17 figs., refs. p. 188–190. Ch. 15: Annotated titles for additional reading. Price: Text ed., $1.80; Trade ed., $2.40. **DWB**—A new and interesting text on meteorology for geography students patterned along the lines of the recent school of Dynamic Climatology instigated by BERGERON in 1925 and developed by HAURWITZ and AUSTIN (1944) and H. FLOHN along slightly different lines. The first half of the book covers the energy balance of the atmosphere (radiation kinetics, potential and thermal) and its sources and variations; the moisture in the atmosphere (clouds, rain, snow, fog); stability, convection and turbulence; pressure or density and wind movements; air masses, fronts and air mass analysis; cyclones; anticyclones; and the general circulation in relation to climatic zones. The second half takes up the climate of the various major geographic areas of the world from a synoptic or 3-dimensional point of view: the intertropical belt, the oceans, trades, etc.; Tropical Africa; North America; the monsoonal climates of SE Asia; Europe and, finally, the Mediterranean Region. For some reason South America, Australia and Arctic Asia are not treated in this text, although other regions are covered very adequately. The appendix contains brief review of a number of recent textbooks on meteorology and climatology (mostly English language) and a good bibliography of supplementary sources available to most students in Britain or America. Nothing in the textbook would offend any synoptic or dynamic meteorologist, although the treatment is by nature general. *Subject Headings:* **1. Meteorology textbooks 2. Climatology textbooks 3. Dynamic climatology 4. Textbooks.**—*M.R.*

5.2–5 551.576.11:551.574.1

†Mason, B. J., **Progress in cloud physics research. A progress report on recent investigations at Imperial College, London.** *Archiv für Meteorologie, Geophysik und Bioklimatologie, Ser. B,* 6(1):1–52, **1953.** 26 figs., 6 tables, 52 refs., 16 eqs. English German and French summaries p. 1–2. **MH-BH**—This valuable report collects 4 years' research on the physical processes in clouds which culminate in release of precipitation. It deals first with spontaneous nucleation by collision of vapor molecules. Measurements of condensation nuclei over the N. Atlantic are tabulated according to cloud types, large salt nuclei and their contribution to opacity, and origin of nuclei. Sec. 4 covers nucleation of supercooled water, initiation of ice phase, and freezing of supercooled drops. The expansion chamber experiments of FINDEISEN and SCHULZ are reexamined, freezing temperatures of solutions of electrolytes and chemical seeding of supercooled clouds are discussed. Sec. 5 deals with theory and observation of growth of ice crystals in clouds or on solid surfaces, Sec. 6 with precipitation mechanisms in stratified clouds and Sec. 7 with production of showers by coalescence, ice particles or wet hailstones. In Sec. 8 experimental studies of precipitation by radar and drop spectrograph are described. Finally, author considers macroscopic features of ice clouds and orographic cirrus. *Subject Headings:* **1. Cloud physics 2. Droplet coagulation 3. Condensation nuclei.**—*C.E.P.B.*

5.2–6 551.573:536.42

†Penman, H. L., (*Rothamsted Experimental Station, Harpenden, Herts*), **Evaporation in nature.** *Physical Society of London, Reports on Progress in Physics,* 11:366–388, **1946/1947.**

5 figs., 47 eqs., bibliog. p. 387–388. **DWB**—Valuable survey of literature (based on some 90 papers) on the history of evaporation research, theory of evaporation (aerodynamic approach and energy balance), evaporation measurements (open water, bare soil, cropped soil and catchment areas). Detailed discussion is devoted to the "power law" of evaporation, evaporation theory of FROST (1946), ROHWER's evaporation studies, pressure influence on evaporation and author's own studies on soil evaporation. Summer evaporation increases with the frequency of re-wetting. Evaporation rate from soil predictable from weather data during winter conditions when the surface is moist. *Subject Headings:* **1. Evaporation research 2. Evaporation theory 3. Evaporation from soil.**—*A.A.*

5.2–7 551.5(02) 551.587

*†Schneider-Carius, Karl (*Bad Kissingen*), **Die Grundschicht der Troposphäre.** [The ground layer of the troposphere.] Leipzig, Geest & Portig, **1953.** 168 p. 25 tables, 67 refs., bibliog. p. 151–164. *Probleme der kosmischen Physik*, v. 26. **DLC**—An original approach to the physics of the atmosphere is used in this new monograph which bridges the gap between microclimatology and meteorology. The structure of the atmosphere from the ground to the tropopause as determined from aerological soundings forms the basis for the detailed organization of the book. The outline of contents comprises 5 pages with nearly 300 headings and sub-headings, but each topic is limited to a paragraph or two of review of the important literature on the subject. The main headings include: 1) historical material on the vertical structure of the atmosphere 2) the surface layer of the atmosphere, 3) statistical aerology, 4) frictional effects of the earth surface, 5) problems of mass exchange and the boundary layer, 6) radiation influences, 7) synoptic aerology, 8) climatological aspects and 9) geographical applications. The bibliography contains hundreds of references and in addition there is an author and subject index. A great deal of recent material (through 1950) has been included—over half being German contributions. Tabular and graphic material, soundings, etc. are used profusely to illustrate the text. The statistical approach prevails over the synoptic throughout. In Pt. 2 material on the structure and height of clouds and stability considerations form an important part of the contribution this book makes to modern meteorology. *Subject Headings:* **1. Meteorology textbooks 2. Aerology 3. Textbooks.**—*M.R.*

5.2–8 551.579:551.588.1:016

†United Nations Educational, Scientific and Cultural Organization, **Reviews of research on arid zone hydrology.** *UNESCO, Arid Zone Programme*, I, **1953.** 212 p. figs., 1622 refs., tables, maps in pocket. Price: $4.50; 25/–; 1,250 fr. **DWB**—This handbook of references and reviews for arid zone hydrology is an important document resulting from international scientific cooperation. With the exception of the deserts under Soviet control, there is a review for each arid region, as Northwest Africa (new rainfall map), Northeast Africa, Union of South Africa and Angola, Middle East (excellent data), India and Pakistan, United States and Canada (a very substantial review), Latin America and Australia. Maps of the world distribution of arid and semiarid homoclimates (by P. MEIGS) are added. Other maps show the distribution of rainfall, temperature and hydrologic basins for selected regions. *Subject Headings:* **1. Hydrologic bibliographies 2. Arid zone research 3. Hydrologic research.**—*A.A.*

5.2–9 551.579(02)

†*Wundt, Walter (*Hon. Prof. Freiburg Univ.*), **Gewässerkunde.** [Hydrology.] Berlin, Springer-Verlag, **1953.** 320 p. 185 figs., tables, bibliog. p. 305–310. **DLC**—This textbook on hydrology covers in a thorough and detailed manner the manifold aspects of scientific and engineering hydrology with extensive and almost exclusive references to German sources and literature, although treating of conditions all over the earth. The author approaches the subject from the point of view of the climatologist or geographer, beginning with the hydrologic cycle, arid and humid regions, general circulation, orographic influences, and runoff distribution over the earth in Pt. A. Pt. C deals with hydrology and climate in more detail, including detailed discussion of snow, ice and glaciers in relation to runoff. Geomorphology; Ground water; Biological aspects (and chemical); Statistical methods; Floods, droughts and climatic changes; Regular variations in runoff and, lastly, Prediction techniques occupy successive

chapters. Numerous borrowed and a number of original diagrams and graphs are included, as well as considerable tabular data. *Subject Headings:* **1. Hydrology textbooks 2. Textbooks** —*M.R.*

GENERAL METEOROLOGY

See also: **Agromet. stations on collective farms** (Gaĭvaronskiĭ), 5.2–2; **Restless atmos.** (Hare), 5.2–4; **Ground layer of troposphere** (Schneider-Carius), 5.2–7.

5.2–10 551.5(09)

McIntire, D. P. (*Canada, Met. Div.*), **Some trends in modern meteorology.** *Physics in Canada*, Toronto, p. 13–17, **1951. DLC**—Advances made during the last decade in polar front theory and in jet stream research are summed up. Giving a review of the work of international authorities in those fields, the author conveys to the non-professional reader a general idea of theoretical background and practical importance of polar front and jet stream investigation. *Subject Headings:* **1. Progress in meteorology 2. Jet stream 3. Polar fronts.** —*G.T.*

5.2–11 551.5(09)

Raethjen, Paul, **Zur Systematik der meteorologischen Wissenschaft.** [On the systematics of meteorological knowledge.] *Germany. Deutscher Wetterdienst in der U. S. Zone, Berichte*, No. 38:5–7, **1952. DWB**—A rapid historical survey of the development of synoptic meteorology and attempts to unify it in a system, not yet achieved but to be striven for. *Subject Heading:* **1. History of meteorology.**—*C.E.P.B.*

5.2–12 551.5(09) 551.5:06(44)

Sanson, M. J., **Trilogie météorologique versaillaise.** [Meteorological trilogy of Versailles.] *La Météorologie*, No. 27:117–122, July/Sept. **1952.** 3 figs. **MH-BH**—The history of meteorology in France is illustrated by events which occurred in Versailles with intervals of about 100 years. In the years after 1652 the Academy of Sciences was established, and observations of precipitation, evaporation, atmospheric electricity, etc. begun. Experiments with lightning rods were made in 1752 and, finally, in 1852 the Meteorological Society was founded. *Subject Headings:* **1. History of meteorology 2. Meteorological societies 3. Versailles, France.**—*A.A.*

5.2–13 551.5(09)(436)

Schmauss, August (*Munich*), **Betrachtungen zur Jahrhundertfeier der Wiener Zentralanstalt für Meteorologie und Geodynamik.** [Observations on the hundredth anniversary of the Vienna Central Station for Meteorology and Geodynamics.] *Austria. Zentralanstalt für Meteorologie and Geodynamik, Jahrbuch*, 88:IV–XII, **1951. DWB**—A concise history of meteorology during the last hundred years emphasizing the leadership of Austrian meteorologists, which gave with a minimum of financial sources a maximum of results. *Subject Headings:* **1. History of meteorology 2. Austria. Zentralanstalt für Meteorologie und Geodynamic 3. Austria.**—*A.A.*

5.2–14 551.5(09) 551.5:06(44)

La Société Météorologique de France (1852–1952). [Meteorological Society of France (1852–1952).] *La Météorologie*, No. 27:107–116, July/Sept. **1952. MH-BH**—Brief historical review. The society was established on Aug. 17, 1852 by 150 persons. The "Bureau Central Météorologique" was created only 26 years later in May 1878. The number of members went over 200 in 1925 and was 1100 in 1951. Pages 109–112 present a description of the festival and pages 113–116 the speech of MAX HYMANS, president of the society, which gives additional historical information. *Subject Headings:* **1. History of meteorology 2. Meteorological societies 3. Société Météorologique de France 4. France. I. Hymans, Max.**—*A.A.*

5.2–15 551.5:001.4(02)

Zamorskiĭ, A. D., **Atmosfernye iavleniia.** [Atmospheric phenomena.] *Meteorologiia i Gidrologiia*, No. 8:40–44, Aug. **1952.** table, 7 refs. **DLC**—The author criticises the Hydro-

meteorological manual issued in 1946 and especially its section "Atmospheric phenomena" (Pt. 1, No. 3). The section contains some errors and obsolete ideas of which the most important are: two cases of glazed frost formation are described in the manual, namely, the formation from supercooled rain and when rain freezes on the soil surface and objects having a temperature lower than the freezing point. It is more correct, according to the author's position, to divide the phenomenon into two classes. Two types of formation are classified as precipitation: 1) the precipitation falling from the atmosphere and 2) deposits formed on the soil surface. Ice fog is related to the fog class, but ice needles are included in the precipitation class. The descriptions of intensity of the phenomenon using words recommended in the manual caused many difficulties and are subjective; for instance, the concept of heavy and light frost will be very different for observers in Georgia and Yakutsk republics. The author proposes a new classification of atmospheric phenomena, using the five following classes: 1) deposits of water and ice on objects and soil surface, 2) precipitation of water or ice falling on the soil surface, 3) turbidity of air, 4) wind phenomena and 5) optical phenomena. *Subject Headings:* **1. Definitions 2. Observers manuals 3. U.S.S.R.**—*N.T.Z.*

5.2–16 551.5:016(485) 551.5:06(485)

†Ångström, Anders K., **Meteorological activity in Sweden July 1948–June 1951.** *I.U.G.G. Association of Meteorology, Brussels, 1951, Rapports Nationaux*, p. 47–56, June **1952.** bibliog. p. 54–56. **DWB**—Detailed report on meteorological research, conducted by the State Meteorological and Hydrological Institute of Sweden and the Meteorological Institutes of the universities at Stockholm and Uppsala with an extensive list of published papers. The main topics covered are practical meteorology, structure mechanics and thermodynamics of the atmosphere, radiation, hydrometeorology, climatology, etc. A separate report of the institute headed by ROSSBY is added; here the main efforts are concentrated on the problems of general circulation and the dynamics of jets and vortices. *Subject Headings:* **1. Meteorological research 2. Sweden. I. Rossby, C. G.**—*A.A.*

5.2–17 551.5:016(45) 551.5:06(45)

†Bilancini, Raoul, **Rapport sur l'activité météorologique en Italie de 1948–1950.** [Report on meteorological activity in Italy, 1948–1950.] *I.U.G.G. Association of Meteorology, Brussels, 1951, Rapports Nationaux*, p. 82–93, June **1952.** bibliog. **DWB**—Report on scientific activity in meteorology and related fields conducted in Italy by the "Servizio Meteorologico dell'Aeronautica" and a great number of other scientific institutions. List of publications contains 113 papers, almost all of which are written in Italian. *Subject Headings:* **1. Meteorological research 2. Italy.**—*A.A.*

5.2–18 551.5:016(493) 551.5:06(493)

†Dufour, Louis, **L'activité météorologique en Belgique de 1948 à 1951.** [Meteorological activity in Belgium, 1948–1951.] *I.U.G.G. Association of Meteorology, Brussels, 1951, Rapports Nationaux*, p. 41–45, June **1952.** refs. **DWB**—This report on meteorological research lists, within the text, a great number of papers published in the field of general, local, medical and agricultural climatology, radiation, dynamics and thermodynamics of the atmosphere, general circulation, weather forecasting and history of meteorology. *Subject Headings:* **1. Meteorological research 2. Belgium.**—*A.A.*

5.2–19 551.5:016

†Germany. Deutscher Wetterdienst in der US-Zone. Wetterdienstbibliothek, **Zugänge der Wetterdienstbibliothek.** [Accessions to the Weather Service Library.] First issue received, v. 1, no. 1, March 1949. Last issue received, v. 5, no. 11, **1953.** Mimeo. **DWB**—This valuable series contains in each issue the accessions of the Bad Kissingen Library (under KARL KEIL's supervision) in all fields of meteorology and geophysics. Publications of the various weather services in Germany, contents of meteorological journals, meteorological articles in other journals, both native and foreign, and books or monographs of interest to meteorologists are listed. Before 1952 the material was listed by categories such as cited above.

Since Jan. 1952 the material has been arranged by subject under the U.D.C. system so that each item can be clipped, pasted on cards and filed in any desired order. Each number contains 10–20 pages and was issued semimonthly (though somewhat irregularly) 1949 through 1951 and monthly from 1952. The coverage of German technical, scientific, agricultural, medical and popular periodicals is exceptionally good. *Subject Headings:* **1. Bibliographic series 2. Meteorological bibliographies 3. Accession lists.**—*M.R.*

5.2–20 551.5:016

Gleeson, Thomas A., **Bibliography of the meteorology of the Mediterranean, Middle East and South Asia areas.** Florida. State University. Dept. of Meteorology, Contract AF 19(122)-466, Scientific Report No. 1, Appendix, April 1, **1952.** 37 p. **DWB**—A concise cross section through the regional meteorological literature for the Mediterranean Sea, Southern Europe, Northwest Africa, Northeast Africa (including Palestine, Syria, Lebanon!), Southwest Asia, India, Indian Ocean, Burma and Siam based on the main American and British meteorological sources. Some of the references are annotated. *Subject Headings:* **1. Meteorological bibliographies 2. Mediterranean area 3. Middle East 4. Africa 5. Southeast Asia. I. Florida. State University. Dept. of Meteorology II. Contract AF 19(122)-466.**—*A.A.*

5.2–21 551.5:03:460

†Hernandez, Haydee and Apai, Rosa Wittenberger de, **Diccionario de meteorologia.** [Dictionary of meteorology.] Montevideo, La Casa del Estudiante, Jan. **1953.** 328 p. Mimeo. Note: Bibliographic citations throughout. **DWB**—This substantial glossary contains about 3000 Spanish terms used in meteorological literature, together with definitions, comments and bibliographic references to usage in Spanish American publications, or to sources of definitions in British or American literature (e.g., *Weatherwise*). This glossary is definitely not a mere translation of the British or U. S. Weather Bureau meteorological glossaries, but an original work with definitions of many terms such as evapotranspiration, Taylor diagram, Wigand diaphanometer, radar, etc. not found in the English language counterparts, and an essay on artificial precipitation wherein it is held to be impractical, at present, to produce rain in nature by artificial means. *Subject Headings:* **1. Meteorological glossaries 2. Glossaries—Spanish language 3. Spanish language glossaries.**—*M.R.*

5.2–22 551.5:06

Byers, Horace R. (*Pres., American Met. Soc.*), **Meteorology and the publishing business.** *American Meteorological Society, Bulletin,* 34(3):128–130, March, **1953. DWB**—In his Presidential Address before the A.M.S. at its New York Meeting (Jan. 1953), Dr. Byers stated that the purpose of the society was to develop and disseminate knowledge of meteorology in all its phases and applications, and that the dissemination of knowledge was its principle function. This is done by: 1) education, 2) personal communication and 3) scholarly publication. Most of the members' dues and the society's efforts go toward publication. In addition, grants from the Munitalp Foundation and other forms of aid help to subsidize the periodical and monograph or book publication ventures in meteorology. Difficulties in commercial publication are mentioned and the society's various publications discussed in some detail. *Subject Headings:* **1. Meteorological publications 2. Meteorological societies 3. American Meteorological Society.**—*M.R.*

5.2–23 551.5:06(09)(43)

Keil, Karl, **Der Anteil Deutschlands an der Entwicklung der internationalen Zusammenarbeit auf meteorologischem Gebiet.** [The part of Germany in the development of international cooperation in meteorology.] *Meteorologische Rundschau,* 6(7/8):137–138, July/Aug. **1953. DWB**—On the occasion of the reentry of Germany into the World Meteorological Organization, the history of international meteorology in Germany since 1654 (Mannheim Societas Meteorologica Palatina) and German participation in the I.M.O. meetings since 1872 are summarized. *Subject Headings:* **1. History of meteorological organizations 2. Germany.**—*C.E.P.B.*

METEOROLOGICAL OBSERVATIONS AND INSTRUMENTS

METHODS OF OBSERVATION

See also: **Monthly totals of direct solar radiation . . .** (Ukraintsev), 5.2–126; **Vertical velocity calculation with baric topographic charts** (Orlova), 5.2-185; **Wet and dry spell duration** (Cooke), 5.2–215; **Snow conditions, Austria, 1901–50** (Austria. Central Hydrogr. Bur.), 5.2–223.

5.2–24 551.501:551.594.14:546.296

Haxel, Otto, **Eine einfache Methode zur Messung des Gehaltes der Luft an radioaktiven Substanzen.** [A simple method of measuring the content of radioactive substances in the air.] *Zeitschrift für angewandte Physik*, 5(7):241–242, July **1953.** fig., 3 refs. **DLC**—Filter papers containing asbestos or amber have the property of retaining radioactive emanations. If a measured volume of air is passed through such a filter and the radioactivity of the paper measured, the radioactivity of the air is given. Its nature can be determined from the decay curve. *Subject Heading:* **1. Radioactive content measurement.**—*C.E.P.B.*

5.2–25 551.501.4:551.55

Cabrita, Manuel T. Ferreira (*Chief, Macao Met. Serv.*), **Componentes do vento.** [Wind components.] *Macao. Serviço Meteorológico, Notas Científicas*, No. 6:23–47, **1953.** 3 tables, 2 graphs. In Portuguese and English. **DWB**—In connection with the acquisition of a "Template" ruler by the Pan American Airways Office in Lisbon, the theory of calculating wind components (parallel and normal to flight) is discussed. The scaling of winds from upper air charts with the help of the ruler is explained. Auxiliary tables and graphs are presented. *Subject Headings:* **1. Wind computation 2. Wind components 3. Computation tables 4. Computation aids.**—*G.T.*

5.2–26 551.501.4:551.55

Canada. Meteorological Division, **The M.S.C. wind vector plotting machine, Type I.** *Canada. Meteorological Division, Circular*, 2228, Ins. 44, Jan. 8, **1953.** 6 p. 3 figs. **DWB**—A simple device for plotting horizontal projections of position vectors of a balloon on the standard M.S.C. plotting board is described. It consists of a quarter circle plate (adjustable to the plotting board) provided with a scaled elevation arm and a rectangular ruler. Geometric principles and use of the device are explained. This plotting aid is suitable for rawinsonde, radar ranging and pilot balloon work. *Subject Headings:* **1. Wind vector computations 2. Protractors.**—*G.T.*

5.2–27 551.501.4:551.521.4

CHkhaidze, SH. M., **K voprosu o privedenii koeffitsientov prozrachnosti atmosfery k edinichnoĭ masse.** [The problem of reducing coefficients of atmospheric transmission to a uniform mass.] *Akademiia Nauk, SSSR, Izvestiia, Ser. Geofizicheskaia*, No. 6:88–90, **1952.** 2 figs., 2 tables, 2 refs. **DLC**—An empirical method for reducing the coefficient of transmission of the atmosphere to unit atmospheric mass is described. Observations were made at the Abustuman Astrophysical Observatory in the Kanobili Mountains in the Georgian SSR. Here $m=1$, when $Z_0=34.0°$. Data on the intensity of radiation at different degrees of transmission and the calculated coefficient of transmission are given. *Subject Headings:* **1. Transmission coefficients 2. Radiation intensities.**—*I.L.D.*

5.2–28 551.501.4:681.177

Copeland, John A. (*U. S. W. B., Wash., D. C.*), **The gold mine at Ashville.** *Weatherwise*, 6(2):33, 57, April **1953.** **MH-BH**—A brief article telling about the National Weather Records Center at Ashville, N. Carolina, where 200 million punched cards are stored and processed for the Air Force, Navy, Weather Bureau and, when requested, for business and industry. The building which houses this unit and some of the operations (card punching and sorting) are shown in photographs. *Subject Headings:* **1. Data processing centers 2. Punched card programs.**—*M.R.*

5.2–29 551.501.4:551.511:551.524

Demiańczuk, Piotr Pawel, **O współźaleźności miedzy temperaturą potencjalna i ekstremalną wartością funkcji prawdopodovieństwa.** [On the relation between the potential temperature and the extreme value of probability function.] *Przegląd Meteorologiczny i Hydrologiczny*, No. 1/2:116–121, **1952.** 14 eqs. French summary p. 121. **MH-BH**—This sketch of extensive work published in *Wiadomosci Sluzby Hydrologicznei i Meteorologicznei* in 1952 discusses relations obtained by use of the well known formula. *Subject Headings:* **1. Potential temperature computation 2. Probability theory.**—*N.T.Z.*

5.2–30 551.501.4:551.571

Dinkelacker, Otto, **Die thermodynamische Begründung der Magnus-Formel.** [The thermodynamic basis of Magnus' formula.] *Annalen der Meteorologie*, 5(3/5):147–148, **1952.** 8 eqs. **MH-BH**—MAGNUS's empirical formula relating saturation vapor pressure P to temperature t,

$$\log P = c + \frac{at}{b+t}$$

is derived from the Clausius-Clapeyron vapor pressure function. *Subject Heading:* **1. Hygrometric formula.**—*C.E.P.B.*

5.2–31 551.501.4:551.524.7

Grandmontagne, R., **Remarques sur le calcul des températures de l'atmosphère.** [Notes on the calculation of atmospheric temperature.] *Annales de Géophysique*, 8(4):443–446, Oct./Dec. **1952.** 2 figs., 3 tables, 2 refs. **MH-BH**—After determining the correlation between pressure and temperature variation with height, the author computes air temperatures between 43 and 71.5 km altitude. The values presented are based on data obtained in rocket flights reported by HAVENS, KOLL and LA GOW. Three temperature maxima are identified (296° at 45 km; 312° at 53.25 km and 410° at 67 km). *Subject Headings:* **1. Temperature calculations 2. Upper air temperatures 3. Rocket data.**—*G.T.*

5.2–32 551.501.4:551.577

Paulhus, Joseph L. H. and Kohler, Max Adams (*U. S. W. B., Wash., D. C.*). **Interpolation of missing precipitation records.** *Monthly Weather Review*, 80(8):129–133, Aug. **1952.** 4 figs., 2 tables, ref., 5 eqs. **MH-BH**—The discontinuation of the interpolation of missing precipitation records since 1948, when machine methods for the preparation of climatological data were adopted by the U. S. Weather Bureau, resulted in a serious handicap to users of published precipitation data. Beginning with July 1952 a change of the existing policy was made and the formula $p_x = 1/3\,[a_1P_1 + a_2P_2 + a_3P_3]$ will be used for the interpolation of missing precipitation amounts at station x using the observations at three surrounding stations ($i = 1, 2, 3$) with $a = N_x/N_i$ if any $|N_x - N_i|$ is greater then 0.1 N_x. N—normal annual precipitation amount. Otherwise $a = 1$ will be used. *Subject Headings:* **1. Interpolation of records 2. Precipitation records.**—*A.A.*

5.2–33 551.501.4:551.577

Schirmer, Hans, **Über die Reduktion von kürzeren Niederschlagsreihen.** [On the reduction of short rainfall records.] *Germany. Deutscher Wetterdienst in der US-Zone, Berichte*, No. 42:54–57, **1952.** 6 tables, 6 refs. **DWB**—In compiling monthly mean rainfall maps for Germany various methods of correcting short series were tried. The usual quotient method may lead to considerable errors. The favored method is to find the annual total and divide among the months in proportions given by neighboring stations, with due regard to topography. *Subject Heading:* **1. Rainfall computation.**—*C.E.P.B.*

OBSERVATIONAL DATA

See also: **Summer temp., Finland** (Johansson), 5.2–140; **Microclimatic studies, Coimbatore** (Venkatanarasinga, Balasubramaniyan, C. and A.), 5.2–262.

5.2–34 551 506.1(43)

*Germany. Deutsche Demokratische Republik. Meteorologischer und Hydrologischer Dienst, **Monatlicher Witterungsbericht.** [Monthly weather report.] Potsdam, pub. by the

Govt. First No. received v. 4, no. 1, Jan. **1950.** Last No. received v. 6, no. 6, June **1952.** charts, tables, graphs. **DWB**—Routine features: description of weather, list of weather situations, monthly climatological averages, daily values and graphical presentation for selected stations, phenological observations, maps with averages and departures for temperature and precipitation as well as phenological maps. *Subject Headings:* **1. Monthly weather reports 2. Observational data 3. Eastern Germany.**—*A.A.*

5.2–35 551.506.1

Great Britain. Meteorological Office, **Notes on the meteorological observations made in British Colonies and Protectorates, etc. in 1939–47 and summarised in the Annual Reports of Colonial Governments.** *Great Britain. Meteorological Office, M.O.M.*, 150/1939–47, pub. **1952.** 38 p. Mimeo. **DWB**—These notes give extensive information on the climatic summaries available for the years 1939–47 in 35 British Colonies and Protectorates in all parts of the world. The first observations made in these colonies date as far back as 1852, although some didn't begin until 1935–45 or later. Since 1907 uniform summaries have been prepared by the Colonial governments and published since 1910 (except for war years) in the Colonial yearbooks, reprints of which are furnished to the Meteorological Office, London. The extensive annotations give details of types of observations made at various types of stations which are listed, hours of observation, exposure of instruments and definitions of table headings, etc. *Subject Headings:* **1. Climatic summaries 2. Meteorological networks 3. British Colonies.**—*M.R.*

5.2–36 551.506.1:551.574.41(569.4)

*Israel. Meteorological Service, **Annual dew summary, according to Duvdevani's method of observation, 1952.** *Israel. Meteorological Service, Ser. B*, No. 5/D, **1953.** 1 p. table. In Hebrew and English. **DLC**—Table gives for 24 stations (lat., long., and height shown) number of nights with dew and total amount, for each month and year. Annual totals range from 1.4 to 38 mm. *Subject Headings:* **1. Dew data 2. Annual meteorological reports 3. Israel.**—*C.E.P.B.*

5.2–37 551.506.1:550:34(729.4)

*Port-au-Prince, Haiti. Séminaire-Collège St.-Martial. Observatoire Météorologique, **Bulletin Annuel, Année 1950.** [Annual Bulletin, 1950.] Signed, J. B. Bettembourg, Directeur, April 24, **1952.** 40 p. photos, tables. **DWB**—Meteorological and seismological data for the Observatory of the Seminary College are summarized for 1950. Pressure, temperature, vapor pressure, relative humidity, wind direction frequencies for different times of the day, cloud cover, diurnal variation in wind frequency, sunshine duration, precipitation and frequency of hours of precipitation are tabulated. Historical sketch of the Observatory given p. 35–40. *Subject Headings:* **1. Annual meteorological reports 2. Observational data 3. Seismological data 4. Port-au-Prince, Haiti. Séminaire-Collège St.-Martial. Observatoire Météorologique 5. Haiti.**—*M.R.*

5.2–38 551.506.1:551.577(729.4)

*Port-au-Prince, Haiti. Séminaire-Collège St.-Martial. Observatoire Météorologique, **Bulletin pluviométrique, années 1948, 1949, 1950.** [Rainfall bulletin, 1948, 1949, 1950.] [1951?] 94 p. mostly tables. **DWB**—Daily rainfall totals for 32 stations in Haiti are tabulated for each month of the years 1948, 1949 and 1950, and the monthly totals and number of days with rain given at the bottom of the page for each station. A 2-page summary of weather conditions (pressure, temperature, rainfall, departures from normal, and peculiarities of the rainfall of each month, where pertinent) are given at the end of each year's data tables. *Subject Headings:* **1. Precipitation data 2. Annual rainfall summaries 3. Haiti.**—*M.R.*

5.2–39 551.506.1(058)(494)

*Rod, Ernest (*Geneva Obs.*), **Résumé météorologique de l'année 1951 pour Genève.** [Meteorological summary for Geneva for 1951.] *Geneva. Observatoire, Publications, Ser. M, Météorologie*, Fasc. 25, **1952.** 13 p. entirely tables. Reprint from: *Archives des Sciences*, Geneva. [V. 5?], **1952. DWB**—In addition to brief summary of conditions at Geneva during 1951, thrice daily and mean daily temperatures, extreme temperatures and rainfall,

with departures from normal for each month, season and year are given in tables, also daily values of all elements by months and special tables for thunderstorms, snow, heavy showers and sunshine duration. *Subject Headings:* **1. Annual meteorological reports 2. Observational data 3. Geneva, Switzerland. I. Geneva. Observatoire.**—*M.R.*

5.2–40 551.506.1(43)

*Schmidt, Albert, **Meteorologische Nachrichten. Ergebnisse der meteorologischen Beobachtungen in Wiesbaden im Jahr 1950, 1951.** [Meteorological reports. Results of meteorological observations in Wiesbaden in 1950, 1951.] *Nassauischer Verein für Naturkunde, Wiesbaden, Jahrbücher*, 89:108–113, [1951]. tables. Also: **Die Witterung des Jahres 1951 in Wiesbaden.** [Weather of 1951 in Wiesbaden.] *Ibid.*, 90:132–138, **1952.** tables. Abstracted from reprints. **DLC**—Monthly and 10-day means for the standard climatological elements. Twice as many thunderstorms as normal in 1950, and an unusual drought in 1951 were recorded. *Subject Headings:* **1. Annual meteorological reports 2. Drought 3. Thunderstorm frequencies 4. Climatic data 5. Wiesbaden, Germany.**—*A.A.*

5.2–41 551.506.1(611)

*Tunis. Service Météorologique, **Résumé mensuel du temps.** [Monthly weather summary.] First issue received Sept. **1949;** last issue received Dec. **1952.** Mostly tables and charts. **DWB**—Meteorological observation data are tabulated for all first- and second-order stations in Tunisia. Data on upper air winds, special information for airports, and pluviometric and synoptic charts are included. General weather development, climatic features of the month and effect of weather on progress in farming are summed up. *Subject Headings:* **1. Monthly data bulletins 2. Observational data 3. Tunisia. I. France. Météorologie Nationale.**—*G.T.*

PHENOLOGY

5.2–42 551.506.8:638.1

Rosenkranz, Friedrich (*Wien-Perchtoldsdorf*), **Phänologie und Imkerei.** [Phenology and apiculture.] *Wetter und Leben*, 5(3/4):79–80, May **1953. MH-BH**—In Austria the blossoming date of acacia, which is important to migratory apiculture, is forecast on the basis of the blossoming date of the sweet cherry (early varieties). For different elevations above sea level the author gives time difference in days between blooming of acacia and cherries for different weather conditions. *Subject Headings:* **1. Phenology 2. Apiculture 3. Austria.**—*I.L.D.*

5.2–43 551.506.8:551.584.3

van Eimern, J. and Kaps, E., **Der Beginn der Apfelblüte im Harburger Raum verglichen mit der mittleren Blüte in Nordwestdeutschland.** [The beginning of apple blossoming in the Harburg region compared with middle of blooming in NW Germany.] *Germany. Deutscher Wetterdienst in der US-Zone, Berichte*, No. 42:395–397, **1952.** 2 figs. **DWB**—A chart of mean dates of beginning of apple blossoming in NW Germany and discussion of the factors influencing it. *Subject Headings:* **1. Phenology 2. Northwest Germany.**—*C.E.P.B.*

5.2–44 551.506.8

Zanon, Francesco Saverio (*Venice Obs.*). **Singolarita fitofenologiche del 1951 nel bioclima di Venezia.** [Phytophenological peculiarities of 1951 in the bioclimate of Venice.] *Geofisica Pura e Applicata*, 23:174–184, **1952.** 2 tables, 3 refs. English summary p. 174. **MH-BH**—Compares extreme and mean temperatures of 1951 with long period averages (1836–1876–1935) and gives flowering data (1951) for a large number of species. *Subject Headings:* **1. Phenology 2. Venice, Italy.**—*A.A.*

INSTRUMENT CARRIERS

See also: **Airplane psychrograph modifications . . .** (Woods Hole Oceanogr. Inst.), 5.2–60.

5.2–45 551.507.3:551.510.41:551.510.53

Paneth, F. A., **The chemical exploration of the stratosphere.** *Chemical Society, Journal*, London, **1952;** 3651–3662. 6 figs., 14 plates, 3 tables, 38 refs. **DLC**—Interesting survey of

history and results of chemical investigation of atmosphere (excluding O_3) at ground level and variation with height. Latest rocket results with steel bottles show definite changes of ratios of Helium, Neon and Argon to Nitrogen above 59 km, ratio of 72 km to surface air being: He 2.4, Ne 1.2, A 0.85. These are of right magnitude for theoretical changes in still air. *Subject Headings:* **1. Atmospheric composition 2. Stratosphere.**—*C.E.P.B.*

5.2–46 551.507.321

Better weather balloons coated with plasticizer. *Science News Letter*, 64(6):88, Aug. 8, **1953. DWB**—Brief note on Patent No. 2,646,370 of ERIC NELSON (Madison, N. J.) and assigned to the U. S. Army. The technique specified in the patent is a treatment of neoprene film with a plasticizer which protects the balloon fabric against freezing. Freezing, it is explained, hitherto prevented neoprene balloons from reaching the same height at night as during daytime. *Subject Headings:* **1. Balloon performance 2. Patents. I. Nelson, Eric.**—*G.T.*

5.2–47 551.507.321.2:551.510.53

Bilancini, Raoul, **Palloni sonda stratosferici a quota constante.** [Stratospheric constant-height balloon sondes.] *Rivista di Meteorologia Aeronautica*, 12(4):63–64, Oct./Dec. **1952. MH-BH**—A stratospheric sounding project conducted since June 1951 by the U. S. Air Force, Air Research and Development Command is described briefly. The research is done with sounding balloons maintained at constant levels between 15,000 and 30,000 m. This note is based on an announcement published in the Nov. 1952 issue of *Rivista Marittima*. *Subject Headings:* **1. Sounding balloons 2. Constant level balloons 3. Stratospheric research.**—*G.T.*

5.2–48 551.507.321.2

Ludlam, F. H., **The rate of rise of pilot balloons.** *Meteorological Magazine*, London, 82(976):306–308, Oct. **1953.** fig., 2 refs. **MH-BH**—Describes experiments on rate of rise V of pilot balloons in Royal Albert Hall, London (120 ft). The results can be expressed by

$$v^2 = 4dB/3C_d, \qquad B = 1 - W/H,$$

where d is diameter of balloon, W = weight, H = total lift, C_d = drag coefficient. A curve of relation of C_d to Reynolds number is given. Suggestions about practical pibal work are given. *Subject Heading:* **1. Balloon research.**—*C.E.P.B.*

INSTRUMENTS

See also: **Thermal radiation project** (Cal. Univ., Los Angeles), 5.2–125; **Upper air wind variability determination** (Rapp), 5.2–182; **Rime measurements . . .** (Konček), 5.2–194; **Cloud observations with infrared spectrograph** (Eldridge), 5.2–204.

5.2–49 551.508.7:628.84

Henderson, James H. M. and Hunt, David L., **A simple humidifying system for a small high-humidity room.** *Science*, 114(2958):262–264, Sept. 7, **1951.** photo, diagr. **DLC**—A spray-atomizer-type non-heating humidifying device is described and illustrated and its plan shown in a sectional drawing. The humidifier was constructed for a 500 cu ft Avrna assay room and the main parts are an atomizer, an excess water outlet and an 8″ fan. *Subject Headings:* **1. Humidity calibration chambers 2. Climatic controlled laboratories 3. Humidifiers.**—*G.T.*

5.2–50 551.508.7

Sakate, K. and Okuda, S. (*Okayama Univ. Dept. of Physics*), **The direct measurement of humidity by thermocouple circuit.** *Journal of Agricultural Meteorology*, Tokyo, 7(3/4):121–123, Nov. **1952.** 2 figs., 2 tables, 4 refs. In Japanese; English summary p. 123. **MH-BH**—The authors measured the absolute humidity by a thermo-couple circuit, which converts the variation of humidity into the variation of the reading of galvanometer in directly proportional relation. The value of humidity measured by this method shows a fairly good agreement with that measured by an Assmann psychrometer. The time lag of this method is much smaller than that of the Assmann psychrometer. When the difference between the standard

temperature and the wet-bulb temperature reaches a large value, the measurement does not show the true value of humidity. This method has some advantages over other methods to record the rapidly changing humidity with precision. *Subject Headings:* **1. Humidity measurement 2. Thermocouples.**—*Authors' abstract.*

5.2–51 551.508.71:551.574.41

Bisio, Giacomo, **Studio del fenomeno dell'appannamento in rapporto alla precisione ottenibile coll'igrometro.** [A study of the formation of dew in connection with the accuracy of hygrometers.] *Geofisica Pura e Applicata*, 24:125–134, Jan./April **1953.** 6 figs., 4 refs. English summary p. 125. **MH-BH**—The paper outlines briefly some of the inconveniences of the Alluard-Chistoni hygrometer and the possibilities of reducing same. The influence of either temperature, air speed and time on the manner of starting and the formation of dew on the polished surface of the above mentioned hygrometer, to which some changes have been brought, is discussed. Finally, the highest significant sensitivity and accuracy for relative humidity measurements are examined. *Subject Headings:* **1. Hygrometers 2. Dew on instruments 3. Instrument accuracy.**—*Author's abstract.*

5.2–52 551.508.71 (02)

Canada. Meteorological Div., **Wet and dry bulb psychrometers.** *Canada. Meteorological Div., Cir.* 2199; Ins. 40; Instrument Manual 30, Nov. 25, **1952.** 23 p. 8 figs. **DWB**—This manual discusses and illustrates the unaspirated psychrometer, the aspirated (motor driven fan) psychrometer and the sling psychrometer in all of their ramifications. The psychrometric tables and the Bilham Slide Rule are also discussed and their use illustrated. Measurement of humidity and dew point above and below 0°C at Canadian stations, installation and care of equipment, etc. are also treated. *Subject Headings:* **1. Instrument manuals 2. Psychrometers.**—*M.R.*

5.2–53 551.508.71:551.584

Diem, M., **Feuchtemessung mit Hilfe thermoelektrischer Psychrometer.** [Humidity measurements with the help of the thermoelectric psychrometer.] *Archiv für Meteorologie, Geophysik und Bioklimatologie, Ser. B*, 5(1):59–65, **1953.** 4 figs., 3 tables, 13 refs. German, English and French summaries p. 59. **MH-BH**—A psychrometer for microclimatic measurements is described with diagrams. The elements are lacquered iron-constantan wires in a radiation shield, dry 0.5 mm diameter, wet 1 mm, covered with a cotton wool sleeve 2 mm diameter. Heat capacity and lag much smaller than Assmann's psychrometer. *Subject Headings:* **1. Thermoelectric psychrometers 2. Micrometeorology.**—*C.E.P.B.*

5.2–54 551.508.71

*Inouye, Naoichi, **Investigation on low temperature hygrometer.** *Teion Kagaku* [*Low Temperature Science*], Sapporo, Japan, 3:1–78, **1950.** 74 figs., 9 photos, 24 refs. In Japanese; English summary p. 78. **DWB**—A major treatise based on laboratory tests of accuracy of dew point hygrometers vs. Assmann psychrometers. A low temperature hygrometer of the Rideal-Shaw type (absorption hygrometer) was constructed and tested. An electrical hygrometer, based on the principle that the surface resistance of the glass is changed by atmospheric moisture, was also constructed and tested. The article, although in Japanese, is full of illustrations, graphs, drawings, curves, references, etc. to assist the non-Japanese reading public. *Subject Headings:* **1. Hygrometers 2. Low temperature hygrometry 3. Instrument comparisons 4. Hygrometer calibration.**—*M.R.*

5.2–55 551.508.71

Ives, Norton C. (*Inter-American Inst. of Agricultural Sciences, Costa Rica*), **A dew-point moisture indicator.** *Agricultural Engineering*, 33(2):85–87, Feb. **1952.** 2 figs., 2 tables, 15 refs. **DLC**—A simple home-made dew point hygrometer adapted for operation in a closed container for the purpose of "measuring the dew-point and dry-bulb temperature of an enclosed grain-air mixture, and thereby the relative humidity of the interstitial or ambient

air" of grain (and other dried feedstuff) is described and shown in a diagram. Tables and a graph showing equilibrium condition in terms of relation between relative humidity of the interstitial air and moisture remaining in the dried material are presented and explained. *Subject Heading:* **1. Dew point hygrometers.**—*G.T.*

5.2–56 551.508.71

Reifferscheid, H., **Eine neue Hygrographenform für mikroklimatische Zwecke.** [A new type of hygrograph for microclimatic purposes.] *Germany. Deutscher Wetterdienst in der US-Zone, Berichte*, No. 32:109–110, 1952. **DWB**—The recording element of the instrument is located at a given distance from the measuring hairs so that disturbing influences are almost entirely avoided. Other details are not given. *Subject Headings:* **1. Hygrographs 2. Micrometeorological instruments 3. Germany.**—*A.A.*

5.2–57 551.508.71

Teddington, England. National Physical Laboratory, **Measurement of humidity.** *Teddington, England, National Physical Laboratory. Notes on Applied Science*, No. 4, 1953. 18 p. 6 figs., table, 23 refs. Price: 1s. **DWB**—Survey of methods and equipment for the measurement of atmospheric humidity intended for the use of industrialists and technicians. Next to the gravimetric method, the dew point instruments are the most accurate, but skillful manipulation is required. The electrical resistance hygrometers are not sufficiently developed *Subject Headings:* **1. Humidity measurement 2. Humidity instruments.**—*A.A.*

5.2–58 551.508.71

Torchinsky, B. B., **The neutron moisture meter.** *Canadian Soil Mechanics Conference, 5th, Ottawa, Jan. 10–11, 1952, Proceedings*, p. 64–66. **DWB**—Field work conducted with a neutron moisture and density meter at the University of Saskatchewan during summer 1951 is reported. The operation of the instrument is based on the slowing down and deflection of fast neutrons—passing through media containing hydrogen. Calibration of the instrument was the main objective of the experiments. Methods used are briefly described and preliminary results summed up. *Subject Headings:* **1. Humidity instruments 2. Neutron moisture meters 3. Saskatchewan University.**—*G.T.*

5.2–59 551.508.71

Väisälä, Vilho, **Theory of the lag coefficient of hygroscopic hygrometers.** *Helsinki: Universitet. Meteorologiska Institutet, Mitteilungen*, No. 71, 1952. 10 p. 4 tables, 3 refs., 31 eqs. **DWB**—Assuming that the hygrometer hair acts similar to a hygroscopic solution and that the hair temperature is equal to the air temperature of the lag equation $U = U_s + \frac{4}{3}\frac{p}{E}\frac{dx}{d\tau}$ is derived. U—relative humidity; $U_s - U$ at $\tau = 0$; τ—time; p—air pressure; E—saturation vapor pressure; x—water content of the hair. The approximate coefficient $\frac{4}{3}$ derived from observations made by KLEINSCHMIDT and by NYBERG. *Subject Headings:* **1. Hygrometer lag 2. Hair hygrometers.**—*A.A.*

5.2–60 551.508.71:551.507.352

Woods Hole Oceanographic Institution, **Modifications of the airplane psychrograph and adaptation of the humidity strip to airplane soundings.** Contract N6onr-27702, Marine Meteorology, Technical Report No. 12, July 1951. 10 p. 8 figs., 3 refs. **DWB**—An improved psychrograph was constructed at the Woods Hole Oceanographic Institution. As a recorder, a Leeds and Northrop Speedomax self-balancing potentiometer with a 5 millivolt full-scale sensitivity was chosen. Bendix-Friez radiosonde humidity strips were used. A lagmeter is also described in this article. Diagrams showing the general arrangements of various types of psychrographs, a photo and a reproduction of humidity strip recording are presented. *Subject Headings:* **1. Airplane hygrometers 2. Psychrographs 3. Airplane soundings. I. McCasland, Kenneth II. Contract N6onr-27702.**—*G.T.*

SYNOPTIC ANALYSIS AND FORECASTING

See also: **Temp. changes in air layer near ground and frost forecasting** (Berliand), 5.2–143; **Catalog of large scale weather in Europe** (Hess, Brezowsky), 5.2–284.

5.2–61 551.509 551.511:551.543

*Wadsworth, George P., **Tool for the quantitative study of air mass modification.** M.I.T. Division of Industrial Cooperation, Contract AF 19(122)-446, Report No. 1, May 1, **1951.** 8 p.+charts, 13 tables. **Map, exhibits to accompany. . . .** *Ibid.* [12 p.] **DWB**—An attempt to develop a quantitative measure of the modification of air masses by bodies of water and to establish a theoretical normal temperature from geographical parameters with reference to which the net effect of varying weather processes can be determined. On the basis of data from 67 stations in the U. S., twelve linear regression equations for predicting monthly mean temperatures from altitude and latitude were developed by the least square method. The form of the equation is $T=\hat{T}+E=a_0+a_1L+a_2H+E$; ($T$=actual monthly mean temperature; $\hat{T}$=predicted monthly mean temperature; E=predicted error; L=latitude; H=altitude). The actual and predicted temperatures are presented in tables and the deviation and prediction errors are plotted on maps; "isolines of the errors have been drawn on maps and graphs of the errors versus the months have been plotted." *Subject Headings:* **1. Long range forecasting 2. Air mass modification. I. M.I.T. Division of Industrial Cooperation II. Contract AF 19(122)-446.**—*I.L.D.*

5.2–62 551.509.1:06

Communications of the U. S. W. B. *International Review*, N. Y., 8(1):22–25, Feb. **1953.** photos. **DWB**—The extensive communication system controlled by the U. S. Weather Bureau is described. It comprises the three teleprinter networks "A" (Aviation Weather Service), "C" (Domestic Weather Reporting Service) and "O" (distributing foreign meteorological data to U. S. forecast centers), a facsimile network, commercial radio communication, special radio circuits, etc. A planned improvement in U. S. W. B. communications is announced, namely a high speed (600–1000 words per min.) selective reception teleprinter system. This apparatus which will include an electronic selector in each of the offices, will eliminate duplication by extracting from the reports sent over the high speed line only those actually needed by the particular station. The basic importance of speed in Weather Bureau work is stressed (storm warning is given as one of the examples). *Subject Headings:* **1. Communication networks 2. Facsimile map transmission 3. U. S. Weather Bureau.**—*G.T.*

5.2–63 551.509.3:551.511:06

Bolin, Bert and Newton, Harriet, **Report on a conference on the application of numerical methods in forecasting atmospheric flow patterns.** *Tellus*, 4(2):141–144, May **1952. MH-BH**—Conference was held May 12–14, 1952 at the University of Stockholm, Institute of Meteorology. Papers were presented by Eliassen, Bolin, Neovius, Bellamy, Fjørtoft, Kjellberg, Eady, C. W. Newton, Van Mieghem, Hinkelmann, Smebye, Lönnguist, Clapp, Czapski, Vuorela and Arnason on various aspects of theory, natural and laboratory models and computation problems. *Subject Headings:* **1. Numerical forecasting 2. Conferences.**—*M.R.*

5.2–64 551.509.3(09)

Charney, Jule G., **I progressi della meteorologia dinamica.** [Progress in dynamic meteorology.] *Rivista di Meteorologia Aeronautica*, 11(1):3–9, Jan.–March **1951.** Italian, English, French and German summaries p. 3. **MH-BH**—A translation into Italian of the original article by Charney entitled "Progress in dynamic meteorology" published in the *American Meteorological Society, Bulletin*, 31(7):231–236, Sept. 1950 (*see item* 2.1–42, Jan. 1951, *MAB*). The work of the Bjerknes school since 1904 is reviewed, the methods of barotropic analysis of the upper troposphere outlined and the baroclinic theory as applied to the general circulation and numerical forecasting discussed. *Subject Headings:* **1. Numerical forecasting 2. Atmospheric circulation 3. Dynamic meteorology 4. Progress in meteorology 5. Translations.**—*M.R.*

5.2–65 551.509.3

§Klein, William H. (*U. S. W. B., Wash., D. C.*), **The weather and circulation of April 1953. A cold, stormy month with a low index circulation.** *Monthly Weather Review*, 81(4):115–120, April **1953.** 8 figs., table, 5 refs. **MH-BH**—The development of unusually cold weather in April 1953 (with record low temperatures in some western states) which spread from the West Coast practically over the entire United States, and the precipitation accompanying it, are described. The circulation of the month is analyzed from surface and upper air pressure charts. The interrelation between weather and circulation is discussed. *Subject Headings:* **1. Synoptic studies 2. United States.**—*G.T.*

5.2–66 551.509.3

§Klein, William H. (*U. S. W. B.*), **The weather and circulation of March 1953—including a review of this year's mild winter.** *Monthly Weather Review*, 81(3):77–81, March **1953.** 7 figs., 4 refs. **DWB**—The circulation features responsible for this second-warmest winter (Dec. 1952–Feb. 1953) on record for the U. S. as a whole are analyzed and illustrated by surface and upper air charts. The winter's circulation was characterized by a strong west-southwesterly flow from the Pacific, a blocking ridge over the North Atlantic and the prevalence of southerly winds throughout Canada, Alaska and the Arctic Ocean. The circulation during March, with continuing mild weather, is discussed and illustrated. (For corrections see *Ibid.*, No. 4, p. 129.) *Subject Headings:* **1. Synoptic studies 2. Synoptic charts 3. Winter temperatures 4. United States.**—*G.T.*

5.2–67 551.500.3

§Lamb, H. H. (*Met. Off., London*), **Meteorological situations over the South Polar regions and alimentation of the Antarctic ice-cap.** *I.U.G.G. International Association of Scientific Hydrology, Brussels, 1951, Transactions*, 1:172–184, **1952.** 5 figs., 16 refs. **DWB**—Study based on daily weather maps plotted for a considerable part of the Southern Hemisphere in connection with an expedition on the British whaling factory ship "Balaen" in the summer 1946/7. Sample surface weather maps are presented and analyzed in detail. Other maps show the tracks of depressions and frontal frequencies. The analysis shows that depressions often reach the continent and sometimes even the South Pole. *Subject Headings:* **1. Antarctic weather 2. Synoptic studies 3. Antarctic expeditions 4. Antarctica 5. Southern Hemisphere.**—*A.A.*

5.2–68 551.509.3 551.582(431)

Maede, Hans, **Klimatologische Untersuchungen über das Verhalten der Westwetterlagen im Raum der südlichen Ostsee, und im norddeutschen Flachland.** [Climatological investigations on the relationship of west weather situations over the southern Baltic Sea and over the North German Lowland.] *Zeitschrift für Meteorologie*, 6(10):291–303, Oct. **1952.** 3 figs., 6 tables, 16 refs. **MH-BH**—West weather situation days were marked by prevailing southwest to west flow aloft in which low pressure areas or their fronts produced cyclonic weather. Starting with the mean values of a given station, the author tries to determine significant data for the individual weather elements over a larger area. The material and possible sources of error are considered. Monthly and annual means of daily maxima and minima and daily means of temperature, relative humidity, cloudiness and scalar means of wind velocity for West situations in Greifswald were calculated on the basis of about 100 cases of the interval 1925–1951; the annual variation of these elements is discussed and compared with climatological normals and the relationships of these elements to water temperature of the Atlantic Ocean and global radiation are considered. The regional variations of these elements within the area situated between the Baltic Sea and the Mittelgebirge are discussed with the aid of a differential method on the basis of 29 weather situations from the interval 1947–1949 so that long period West weather means of farther stations (Arkona, Potsdam, Dresden) could also be determined. The area of investigations is extended to the Netherlands coast for a few typical instances. *Subject Headings:* **1. Synoptic studies 2. Climate of the Baltic Sea 3. Climate of Germany 4. Baltic Sea 5. Germany.**—*I.L.D.*

5.2–69 551.509.3 551.515.7(73):551.524.36

§Malkin, W. and Holzworth, G. C. (*U. S. W. B., Wash., D. C.*), **The anticyclone and record low temperatures in central and southeastern United States, April 19–22, 1953.** *Monthly Weather Review*, 81(4):121–128, April **1953.** 14 figs., 3 tables. 8 refs. **MH-BH**—A map showing the track of an anticyclone and its positions at three-hour intervals is presented. From April 19 to April 22, 1953 the anticyclone moved south from central Canada to the Gulf of Mexico and then east to the Atlantic off northern Florida. Characteristics of the anticyclone and weather development in its neighborhood are described in detail and illustrated by charts and cross sections. Near-record and record minimum temperatures observed along the anticyclone path are tabulated. *Subject Headings:* **1. Synoptic studies 2. Anticyclones 3. Temperature anomalies 4. Central United States 5. Southeastern United States.**—*G.T.*

5.2–70 551.509.3:551.524.36(776,754)

§Parry, H. Dean and Roe, Charlotte (*WBAN Analysis Center, Wash., D. C.*), **Record low temperatures in the Mid-Atlantic and East Central States, October 20–22, 1952.** *Monthly Weather Review*, 80(10):195–202, Oct. **1952.** 13 figs., 9 refs. **MH-BH**—Upper air and surface pressure patterns and radiation conditions which combined in producing minimum temperatures as low as 12°F in Minnesota and 11°F in West Virginia, are analyzed. The upper air situation was characterized by strong northwesterly flow in the eastern part of the U. S., with high pressure over the Rockies. The surface pattern shows an anticyclone which formed north of Hudson Bay and by rapid southward displacement brought Arctic air to the Eastern U. S. Surface and upper air charts and a chart showing minimum temperatures are presented. *Subject Headings:* **1. Extreme minimum temperatures 2. Synoptic studies 3. Minnesota 4. West Virginia.**—*G.T.*

5.2–71 551.509.3:519.24

Wahl, Eberhard W.; White, Robert M. and Salmela, Henry A., **The construction and application of contingency tables in weather forecasting.** *U. S. Air Force. Cambridge Research Center, Air Force Surveys in Geophysics*, No. 19, Nov. **1952.** 37 p. 19 tables, eqs. **DWB**—A statistical procedure based on the use of contingency tables is developed for use in weather forecasting. The method makes use of the knowledge of the climatologically observed and theoretically expected frequency of occurrence of meteorological phenomena. Using such information, it is possible to specify the probability of occurrence of a meteorological phenomenon using the past sequence of meteorological parameters, which are called predictors. This technique has the important advantage that nonlinear relationships between meteorological variables can be taken into account. A forecast scheme is developed by using a succession of contingency tables expressing the relationship between previously specified predictors and the meteorological phenomenon that is to be forecast (predictand). Finally, an actual case history of such a forecast scheme is presented. *Subject Headings:* **1. Statistical forecasting 2. Contingency tables.**—*Authors' abstract.*

5.2–72 551.509.3

Weickmann, L., **Periodische Wiederkehr als Grundlage der Prognose.** [Periodical recurrence as basis for forecasting.] *Germany. Deutscher Wetterdienst in der US-Zone, Mitteilungen*, No. 15, Dec. **1952.** 16 p. 15 figs., 6 refs. **DWB**—The author outlines his favorite idea on periodic occurrences in weather, showing the effect of harmonic waves, leading to symmetry points which are considered as a valuable aid for long range forecasting. Furthermore, periodicities are shown for other phenomena in nature (sunspots, tree rings, fishes) and in the business world (industrial production, building construction and real estate activity in the U.S.A.). Even social revolutions seem to follow certain rhythms. *Subject Headings:* **1. Periodicities 2. Symmetry points 3. Long range forecasting 4. Sunspots.**—*A.A.*

5.2–73 551.509.31

§Austin, James M., **Development in the pressure field.** Massachusetts Institute of Technology, Contract N5ori-07804, Technical Report, No. 11, May 15, **1952.** 43 p. 5 tables, 12 figs., charts, 22 refs. **DWB**—The author analyzes a number of weather situations over North America on the basis of surface, 500 and 200 mb pressure and surface isallobaric

charts in order to obtain empirical rules for the improvement of current forecasts. Some high level correlations for temperature and pressure changes are reported. The main method is the separate analysis of the effect of tropospheric and stratospheric cooling and warming. Isallobaric fields at sea level move along the 850 mb isotherms if they arise from low level temperature changes and along the 500 mb isobars if they are caused by high level warming and cooling. *Subject Headings:* **1. Synoptic studies 2. Forecasting rules 3. Isallobaric fields 4. North America. I. Massachusetts Institute of Technology II. Contract N5ori-07804.**—*A.A.*

5.2–74 551.509.31:681.4

§Bushby, F. H. and Hinds, Mavis K., **Computation of the field of atmospheric development by an electronic computer.** *Great Britain. Meteorological Research Committee, M.R.P.* 765, Jan. 8, **1953.** 9 p. 23 figs., table, 9 refs., 3 eqs. Mimeo. **DWB**—A method of evaluating the Sutcliffe development formula for relative divergence between two pressure levels, using a grid (length 160 miles) and a reiterative process on an electronic computer LEO, is described. It was applied to 12 synoptic charts for N. Atlantic and W. Europe (surface isobars and 1000–500 mb thickness), total time 1 hour each. The computed developments are analyzed. The method is a promising forecasting aid. *Subject Headings:* **1. Numerical forecasting 2. Electronic computers.**—*C.E.P.B.*

5.2–75 551.509.31:681.4

Bushby, F. H. and Hinds, Mavis K., **Computation of the 1000–500 mb thickness tendency, the 1000 mb height tendency, and the horizontal field of vertical motion, using an electronic computer.** *Great Britain. Meteorological Research Committee, M.R.P.* 794, March 25, **1953.** 8 p. 3 figs., tables, 4 refs., 7 eqs. Mimeo. **DWB**—Referring to baroclinic model of J. S. Sawyer and F. H. Bushby (*see item* 3.10–76, Oct. 1952, *MAB*), authors reduce equations to a form suitable for use with an electronic computer. These were used first (*M.R.P.* 790) to compute height tendency of 500 mb field over a grid centered on British Isles for 3 synoptic situations, and later to compute base height and thickness changes in ft/hr and vertical motion fields. Computing times were 12 and 15 minutes and results were satisfactory; the chief difficulty being boundary conditions. *Subject Headings:* **1. Numerical forecasting 2. Electronic computers.**—*C.E.P.B.*

CLOUD SEEDING AND ARTIFICIAL PRECIPITATION

5.2–76 551.509.67(44)

Dessens, Henri (*Dir. Puy-de Dôme Observatory*), **Études sur les orages Pyrénéens. Deux campagnes d'insémination des nuages dans le Sud-Ouest.** [Studies on Pyrenees thunderstorms. Two attempts at cloud seeding in the South-West.] *Puy-de-Dome. Observatoire, Publications, Ser. B,* No. 1, **1953.** 7 p. 2 figs. Reprint from: *Pyrénées,* [Pub. by Puy-de-Dome Observatoire] No. 12, Dec. **1952. DWB**—Report on the activity of the "Association for the study of the fight against weather catastrophes" from 1951 to 1952. A broad program for S. France was planned in order to prevent hail storms and even to modify tropical storms. Laboratory studies in cloud physics were made, including methods to prevent coagulation. Field tests were rather disappointing. *Subject Headings:* **1. Weather control 2. Cloud seeding 3. Pyrenees, France.**—*A.A.*

5.2–77 551.509.67:016

†Krick, Irving P. (*comp.*) (*Water Resources Develop. Corp.*), **Bibliography on weather modification and field operations, using the combined facilities of Irving P. Krick, American Institute of Aerological Research (and) Water Resources Development Corporation.** Denver, Colorado, American Institute of Aerological Research, March 25, **1953.** unpaged. Mimeo. **DWB**—A list of 104 lectures or reports prepared during 1947–53 by the Krick Cloud Seeding Corporation for various agencies interested in contracting with him for artificial precipitation studies or experiments. Most of the areas covered are in the dry regions of the states of Montana, Washington, Oregon, California, Arizona, New Mexico, Idaho, Wyoming, Colorado,

the Dakotas or Texas. (The titles of these reports are listed in Pt. III of 4(8), Aug. 1953, *MAB*.) *Subject Headings:* **1. Artificial precipitation 2. Cloud seeding studies 3. Cloud seeding bibliographies 4. Western United States. I. American Institute of Aerological Research II. Water Resources Development Corporation.**—*M.R.*

5.2–78 551.509.67

*Krick, Irving P., **Increasing water resources through weather modification.** *American Water Works Association, N. Y., Journal*, 44(11):996–1020, Nov. **1952.** 15 figs., 3 tables, 15 refs. Abstracted from reprint. **DLC**—The author, who controls almost all commercial cloud seeding operations west of 95°W in the United States, outlines the basic principles of cloud seeding, explains the production of silver iodide nuclei by ground generators and the activity of field operations, and shows a number of cases where rainfall was up to 400% above normal, claiming this as an obvious success of cloud seeding. The cost of the project is less than 1% of the computed benefits. *Subject Headings:* **1. Cloud seeding 2. Cloud seeding effectiveness 3. Industrial meteorology 4. Western United States.**—*A.A.*

5.2–79 551.509.67:551.577.1

*Lieberman, Gerald J., **Evaluation of the 1951–1952 cloud seeding experiment in Santa Clara County.** Stanford, Calif., Stanford Univ. [1953?] 21 p. tables, refs., eqs. **DWB**—A statistical method of rainfall evaluation based on storm totals is developed in detail and applied to records obtained in Santa Clara County during the period 1940–1951. It is found that the test failed to produce sufficient evidence as to the effectiveness of the cloud seeding operations investigated. The results of the procedure—it is believed—would probably have been significant if rainfall had been increased by 30%. *Subject Headings:* **1. Cloud seeding evaluation 2. Precipitation analysis 3. Santa Clara County, Calif.**—*G.T.*

STRUCTURE AND PHYSICS OF THE ATMOSPHERE

STRUCTURE OF THE ATMOSPHERE

See also: **Chemical exploration of stratosphere** (Paneth), 5.2–45; **Stratospheric constant height balloon sondes** (Bilancini), 5.2–47; **Eddy flux, mechanism for vertical transport of ozone** (Reed), 5.2–186; **Charge in ionosphere** (Chalmers), 5.2–297.

5.2–80 551.510:06 550.3:06

Air Force geophysical research. *Physics Today*, N. Y., 6(2):10–13, Feb. **1953.** 6 figs. **DWB**—Scientific work of the Terrestrial Sciences Laboratory, the Atmospheric Analysis Laboratory and the Atmospheric Physics Laboratory of the Air Force Cambridge Research Center is reviewed by members of the respective staffs of these 3 (of 6) sections of the Geophysics Research Directorate (under the direction of H. E. LANDSBERG). Studies of the atmosphere, hydrosphere and lithosphere contribute not only to the present and future operating efficiency of the Air Force, but to the national economy in respect to civil aviation, agriculture, flood control and power production. Concrete examples of research in the fields of ice reconnaissance at T-3 in the Arctic and physics, cloud physics, turbulence, micrometeorology, seismic exploration, acoustical propagation, etc. are given and illustrated. *Subject Headings:* **1. Geophysical research 2. Atmospheric physics research 3. Arctic Ice Island (T-3) 4. U. S. Air Force. Cambridge Research Center. I. Landsberg, H. E.**—*M.R.*

5.2–81 551.510

Bilancini, Raoul, **La struttura dell'atmosfera.** [Structure of the atmosphere.] *Rivista di Meteorologia Aeronautica*, 12(4):61–62, Oct./Dec. **1952. MH-BH**—Review of a paper by C. BLOT published in *Forces Aériennes Françaises*, May 1952. Chemical composition, stratification, temperature distribution and radiation in the atmosphere are discussed. According to BLOT the height of the atmosphere is 2,500 km. *Subject Headings:* **1. Atmospheric structure 2. Reviews. I. Blot, C.**—*G.T.*

5.2–82 551.510.3:629.13

Farthing, E. G. (*Met. Instructor, TWA, Inc.*), **Air density and aircraft operation.** *Trans World Airlines, Inc., Meteorological Technical Bulletin*, No. 53–1, July 8, **1953.** 3 p. diagr. Mimeo. **DWB**—The true air speed of aircraft increases with decreasing density, if the power loss due to reduced oxygen supply is disregarded. A diagram is attached for the computation of the density altitude on the basis of actual and dew point temperature, as well as the pressure for a given point. *Subject Headings:* **1. Air density 2. Aeronautical meteorology.**—*A.A.*

5.2–83 551.510.5

Kaplan, Joseph (*Univ. of Calif. at Los Angeles*), **The earth's atmosphere.** *American Scientist*, New Haven, Conn., 41(1):49–65, Jan. **1953.** 7 figs., refs. **DLC**—A review of the latest concepts with respect to the structure of the atmosphere to its outer limits, the aurora and afterglow, the ionosphere, the importance of ozone, spectroscopy and chemistry of the upper atmosphere and atmospheric tides and winds in the stratosphere. The evidence from meteor trails points to westerly winds of about 125 mph above 50 mi (to 90 mi) and easterly winds at a height of 27 to 50 mi. Noctilucent clouds give estimates of 125 mph speeds at a height of 39 to 54 mi. Sound propagation methods confirm above estimates for 20 to 40 mi height. *Subject Headings:* **1. Upper atmosphere structure 2. Upper atmosphere chemistry 3. Ionospheric winds.**—*M.R.*

5.2–84 551.510.5:001

Kitaoka, Tatsumi (*Centr. Met. Obs. Japan*), **Nomenclature of the upper atmosphere.** *Tateno, Japan. Aerological Observatory, Journal*, 5(2):167–169, Jan. **1953.** In English; Japanese summary p. 168–169. **DWB**—After briefly discussing the atmospheric nomenclature proposed by FLOHN and PENNDORF and by CHAPMAN, the author offers his own English and equivalent Japanese terms for atmospheric strata, which differ from those of other authors mainly in respect to definitions of their boundaries. The suggested stratification is: troposphere, stratosphere, supertroposphere, ionosphere, exosphere; separated by tropopause, stratopause and supertropopause. Another distinction calls for the terms inner, outer and outermost atmosphere. *Subject Headings:* **1. Atmospheric structure 2. Terminology 3. Japanese language.**—*G.T.*

5.2–85 551.510.53:06

*Kellogg, W. W.; Crary, A. P., Ference, Michael, Jr. and others (*The Rand Corp., Santa Monica, Calif.*), **Report of the Standing Committee on Problems of the Upper Atmosphere, 1951–1952.** *American Geophysical Union, Transactions*, 34(1):115–121, Feb. **1953.** fig., table, bibliog. p. 119–121. **MH-BH**—Concise review, listing some 70 references, including mostly American works and a few French and Russian papers. Results of rocket soundings outlined. Supply of German V-2's now nearly exhausted; wide use of aerobees. Other methods include radio and searchlight soundings, sound propagation, meteor detection, airglow and aurora observations and laboratory studies. Seven general theoretical studies were made and 5 papers are devoted to solar-atmospheric relationships, including tropospheric effects. *Subject Headings:* **1. Upper atmosphere research 2. Rocket soundings 3. Solar-atmospheric relationships 4. A.G.U. Committee on Problems of the Upper Atmosphere 5. United States.**—*A.A.*

5.2–86 551.510.53:612

Mayo, Alfred M. (*Douglas Aircraft Co., El Segundo, Calif.*), **Basic environmental problems relating man and the aeropause as visualized by the aeronautical engineer.** (In: U. S. School of Aviation Medicine, Randolph Field, Texas, **Physics and medicine of the upper atmosphere.** Albuquerque, **1952.** p. 6–22. 12 figs., 15 refs.) **DLC**—Some of the environmental factors of importance to man in the aeropause are temperature and pressure. A graph showing estimated skin and boundary layer temperature for a body travelling 3000 mi/hr, a diagram showing cockpit cooling systems and probable types of refrigeration systems applicable at various speeds and graphs showing pressure ratios necessary to compress atmospheric air to 10 lb/sq in. absolute at various altitudes are presented. Problems of refrigeration, pressure

control and ionizing radiation are discussed briefly. *Subject Headings:* **1. Aeropause 2. Physiological climatology.**—*I.L.D.*

5.2–87 551.510.534(581)

Khalek, Abdul, **Variation annuelle de l'épaisseur réduite et de la température moyenne de l'ozone atmosphérique en Afghanistan.** [Annual variation of the reduced thickness and mean temperature of atmospheric ozone over Afghanistan.] *Académie des Sciences, Paris, Comptes Rendus*, 236(25):2424–2426, June 22, **1953.** table, 6 refs. **DLC**—In the course of a spectrophotographic study of diffuse solar radiation at Kaboul (34°N lat.; 1,800 m alt.) from Dec. 1950 to Dec. 1951 (140 days of measurement), ozone thickness and temperature were determined over wave lengths between 3155 and 3248 A. Monthly values of reduced ozone thickness and average ozone temperature are tabulated for the twelve months. The annual variation of ozone thickness shows two maxima connected with tropical air mass invasions. The ozone temperatures are higher than elsewhere, which appears to indicate that the ozone in low latitudes is found in a higher altitude than in moderate latitudes (a fact confirmed by sound propagation studies). *Subject Headings:* **1. Ozone variations 2. Kaboul, Afghanistan.**—*G.T.*

5.2–88 551.510.534

*†Paetzold, Hans-Karl (*Max-Planck-Inst. Weissenau*), **Versuch einer Analyse der gemittelten vertikalen Ozoneverteilung in verschiedenen geographischen Breiten.** [Attempt at analysis of mean vertical ozone distribution in different geographical latitudes.] *Geofisica Pura e Applicata*, 24:83–94, Jan/April **1953.** 6 figs., table, bibliog. p. 93–94. English summary p. 83. **DWB**—Data for O_3 distribution with height calculated from balloon ascents in different latitudes, from rocket flights at Albuquerque, N. Mexico, during solar eclipses at the equator and from the Umkehr effect (Tromsö 68°N) are tabulated, plotted and compared with the curves derived from the theory (based on the photochemical balance). The differences, below 23 km, are attributed to austausch which is greatest near the equator. A secondary O_3 max (16 km) noticed especially in spring in the sub-Arctic, is accounted for by advection from polar regions where the concentration is very high at the end of the polar night. The greatest ozone concentration occurs at 60°N. *Subject Headings:* **1. Vertical ozone distribution 2. Ozone layer 3. Arctic ozone concentration.**—*M.R.*

5.2–89 551.510.534

*†Paetzold, Hans-Karl, **Die vertikale Verteilung des atmosphärischen Ozons nach dem photochemischen Gleichgewicht.** [Vertical distribution of atmospheric ozone by photochemical equilibrium.] *Geofisica Pura e Applicata*, 24:71–82, Jan./April **1953.** 5 figs., 2 tables, bibliog. p. 82. English summary p. 71. **DWB**—The theory of photochemical formation and distribution of O_3 is reviewed with respect to absorption and emission by O_2 in various spectral regions with various intensities of solar radiation. The vertical ozone distribution is then calculated for several parts of the earth on the basis of the photochemical theory and the resulting temperature profile also calculated and shown graphically. The O_3 distribution with solar height $H_0 = 90°$, 45° and 20° is next shown and then the measured O_3 distribution from balloon ascents at Stuttgart, Albuquerque, and Weissenau and during solar eclipses at the equator on two occasions (1931 and 1943). Finally, as is demonstrated, the speed of the reactions which condition the ozone balance varies with temperature (and height) so that no certain knowledge of the ozone distribution can be obtained until more is known about the photochemical reactions which take place under varying conditions in the atmosphere—especially above 25 or 30 km. *Subject Headings:* **1. Vertical ozone distribution 2. Ozone balance in stratosphere 3. Photochemical reactions in upper atmosphere.**—*M.R.*

5.2–90 551.510.534

Ramanathan, K. R. and Ramana Murthy, Bh. V., **Daily variation of amount of ozone in the atmosphere.** *Nature*, London, 172(4379):633–634, Oct. 3, **1953.** 2 figs., 2 tables, 5 refs. **DWB**—Observations at Mount Abu and Ahmedabad, India, show a clear excess averaging 0.30 cm by night over day. *Subject Headings:* **1. Ozone variations 2. India.**—*C.E.P.B.*

5.2–91 551.510.534:551.593.5

*Ramanathan, K. R. and Karandikar, R. V., **Recent work on the measurement of atmospheric ozone and its vertical distribution in India.** *I.U.G.G. Association of Terrestrial Magnetism and Electricity, IATME Bulletin*, No. 13:492–494, **1950. DWB**—Observation of direct sunlight were made with a Dobson photoelectric spectrophotometer at Delhi during Nov. 1945 to March 1947 and daily and monthly mean amounts of ozone calculated for the period. Measurement of the zenith scattered light intensity were taken in clear days at different seasons for various solar distances. The Umkehr effect was evident. Vertical distribution of ozone was calculated and is indicated in a table for layers 0–9 km, 9–18, 18–27, 27–36, 36–45 and 45–54 km over Delhi for total ozone concentration of 0.155, .175, .200 and .217 cm. Similar observations are to be made at Poona and Kodaikanal. *Subject Headings:* **1. Ozone concentration 2. Vertical ozone distribution 3. Zenith scattered light intensity 4. Delhi, India.**—*M.R.*

5.2–92 551.510.535:551.515:621.396

Bennington, T. W. and Prechner, L. J. (*both B.B.C.*), **The B.B.C. ionospheric storm warning system.** *British Broadcasting Corporation, The B.B.C. Quarterly*, 7(2), Summer **1952.** 13 p. 9 figs. Abstracted from reprint. **DWB**—The Ionosphere Section of the Engineering Information Dept. of the British Broadcasting Corp. has issued *warnings* of *imminent* short period deviations from normal ionospheric characteristics from its Tatsfield Receiving Station since Sept. 1941. *Forecasts* are also issued regularly for internal use and guidance in preparing warnings. Details of the warning system, accuracy of *warnings*, observational and collection work of the B.B.C.'s Ionospheric Section, correlation with measurements of terrestrial magnetism, and with reception data for North Atlantic circuits, annual and monthly frequency of warnings (disturbances), duration of warnings (disturbances), diurnal variation in start of warnings, correlation with sunspots, 27-day recurrence tendency of storms, elements *forecast* and accuracy of forecasts are all discussed in detail and evaluated graphically. *Subject Headings:* **1. Ionospheric storm warnings 2. Ionospheric forecasts 3. British ionospheric storm warning system 4. Radio wave propagation disturbances.**—*M.R.*

5.2–93 551.510.535:550.385

Hardwick, B., **Two cases of large F_2 region disturbance associated with small magnetic disturbance.** *Journal of Atmospheric and Terrestrial Physics*, 3(6):347–349, July **1953.** fig., ref. **MH-BH**—Large but local ionospheric disturbances were recorded on International Magnetically Quiet Days, at Canberra on Oct. 26–27, 1947 and at Chungking, Palmyra and Rarotonga on Jan. 11, 1947. *Subject Headings:* **1. Ionospheric storms 2. Magnetic disturbances.**—*C.E.P.B.*

5.2–94 551.510.535:061.6 551.574.1:061.6

Higgs, A. J. (*Australian Sci. Liaison Off., Wash., D. C.*), **Radiophysics in Australia.** *Science*, 117(3031):3, Jan. 30, **1953. DWB**—The Radiophysics Lab. in Sydney began in 1949 as a wartime radar research establishment but is now famous for its peacetime work in radio astronomy and radar and is concerned with ionospheric and upper atmosphere investigations. Work in Australia on cloud physics and "rain making" was spectacular in the early stages (1947). Recently, good results have been obtained by the Laboratory in studies of rain from non-freezing clouds, and of the relative importance of coalescence in raindrop formation. *Subject Headings:* **1. Cloud physics research 2. Radiophysics Laboratory, Sydney, Australia. I. Australia Commonwealth Scientific and Industrial Research Organization.**—*M.R.*

5.2–95 551.510.535:551.594.12

Hok, Gunnar; Spencer, N. W. and Dow, W. G. (*Dept. of Elec. Engr., Michigan Univ., Ann Arbor*), **Dynamic probe measurements in the ionosphere.** *Journal of Geophysical Research*, 58(2):235–242, June **1953.** 6 figs., 3 refs. Also in: Michigan Univ., Engineering Research Institute, Contract W-33-038-ac-14050, Project M824, Upper Air Research Program, Report No. 3, Nov. **1951. MH-BH, DWB**—Preliminary rather successful attempts to determine the ionization in the *E*-layer by means of a probe technique are described. The probe current showed an extremely rapid rise between 90 and 105 km altitude. The result indicates a

positive-ion density about ten times larger than the electron density. Further measurements with improved equipment are recommended. *Subject Headings:* **1. Ionization measurement 2. E layer 3. Probe technique.**—*Authors' abstract.*

MECHANICS AND THERMODYNAMICS OF THE ATMOSPHERE

See also: **Potential temp. and extreme value of probability function** (Demiańczuk), 5.2–29; **Tool for quantitative study of air mass modification** (Wadsworth), 5.2–61; **Numerical forecasting of atmos. flow patterns** (Bolin, Newton), 5.2–63; **Vorticity waves in tropical lat.** (Arakawa), 5.2–109.

5.2–96 551.511:551.515

Kuo, H. L., **The stability properties and structure of disturbances in a baroclinic atmosphere.** *Journal of Meteorology*, 10(4):235–243, Aug. **1953.** 5 figs., 12 refs., 28 eqs. **MH-BH**—Stability and vertical variation of disturbances in a baroclinic zonal current are studied by evaluating vertical wind and profile of horizontal wind from vorticity and thermal equations. The main factor in instability is horizontal heat advection. When friction is neglected all waves shorter than critical wave length Lc are unstable; Lc and most unstable wave length both depend on vertical wind shear and static stability. Very long waves (around 7200 km) are high-level, short (2000 km) are low-level phenomena; intermediate waves are unstable. Short waves remain stable owing to friction; below a critical shear of about 1.5 m/s per 100 mb no disturbance will grow. *Subject Headings:* **1. Stability 2. Atmospheric disturbances.**—*C.E.P.B.*

5.2–97 551.511:551.513

Pisharoty, P. R., **Some aspects of the geostrophic poleward flux of sensible heat.** California. Univ. at L.A. Dept. of Meteorology, Contract AF 19(122)-48, Scientific Report, No. 2, Feb. **1953.** 27 p. 2 tables, 4 figs. (some fold.), 9 refs., eqs. **DWB**—An attempt to study the changes in sensible heat content of the atmospheric zonal rings on a day-to-day basis during Jan. and Feb. 1949 by calculating the daily integrated poleward flux of sensible heat from the separate fluxes for 850, 700, 500, 300 and 200 mb levels. The convergence of the poleward flux of sensible heat is computed and the vertically integrated zonal temperature and the day-to-day changes discussed. Conclusion is that the magnitude of day-to-day changes of the zonal rings is comparable with magnitude of changes that would be caused by convergence of sensible heat flux and that they are not completely accounted for by geostrophic flux convergences acting alone. Also, there are brief spells of a general net ascending motion and consequent cooling simultaneously in many adjacent zonal rings, alternating with brief spells of net descending motion and consequent heating. These spells last one to three days and cancel out in the monthly means. *Subject Headings:* **1. Geostrophic poleward heat flux 2. Atmospheric circulation 3. Heat transfer. I. California. Univ. at L.A. Dept. of Met. II. Contract AF 19(122)-48.**—*M.R.*

5.2–98 551.511:001

Pône, R. (*Service Météorologique Métropolitain, Paris*), **Critères de stabilité d'une couche élémentaire.** [Stability criteria in an elementary layer.] *Journal Scientifique de la Météorologie*, Paris, 4(16):126–134, Oct./Dec. **1952.** 10 figs. In French; French, English and Spanish summaries p. 126. **DWB**—Stability and instability are rigidly defined and the several possible types of instability outlined and illustrated graphically by way of more precise definition and differentiation in applications involving use of adiabatic charts or empirical calculations of aerological data. The line of demarcation is not stability/instability, but instability *impossible* or *possible*. The 5 major types are: (a) absolute instability, (b) dry instability (c) selective convective instability, (d) latent convective instability and (e) absolute stability. *Subject Headings:* **1. Instability criteria 2. Definitions.**—*M.R.*

5.2–99 551.511

Stümke, H., **Quasigeostrophische Darstellung von Konvektionsvorgängen in einer Atmosphäre mit Sperrflächen oder mit freier Oberfläche.** [Quasigeostrophic evaluation of convection processes in an atmosphere with blocking surfaces or with a free upper surface.]

Meteorologische Rundschau, 6(5/6):81–82, May/June, **1953.** fig., 2 refs., 5 eqs. **DWB**—Author's evaluation of convection processes in a stable atmosphere (*see item* 4.3–111, March 1953, *MAB*) is extended to an atmosphere with blocking surfaces (inversions) or with a free upper surface, and with strong mass divergence in a region of steady heat supply (representative of clouds at an inversion). *Subject Heading:* **1. Dynamics of the atmosphere.**—*C.E.P.B.*

5.2–100 551.511:551.525

Vehrencamp, John E. (*Dept. of Engr., Univ. of Calif.*), **Experimental investigation of heat transfer at an air-earth interface.** *American Geophysical Union, Transactions*, 34(1):22–30, Feb. **1953.** 8 figs., 12 refs., 10 eqs. **MH-BH**—Investigation of heat transfer over a smooth, dry lake made by means of thermopile heat meter for the transfer rate into the ground and a net exchange radiometer for the radiant exchange at the earth's surface. Forty-eight-hour record presented. Air temperature distribution close to the surface measured by small thermocouples. Heat balance and temperature gradient technique as well as time variation of heat balance components discussed. Distinguishing between forced and free convection, the author proposes an empirical relationship for the resulting convection containing absolute temperature, wind speed and temperature gradient near the ground. *Subject Headings:* **1. Heat transfer measurement 2. Convection 3. Air-earth heat exchange.**—*A.A.*

5.2–101 551.511

Vowinckel, E., **Berechnungen des Austauschkoeffizienten auf der Suedhalbkugel.** [Calculation of the exchange coefficient in the Southern Hemisphere.] *South Africa. Weather Bureau, Notos*, 1(3):128–136, **1952.** 6 figs., 4 tables, 5 refs. **DWB**—Study devoted to the meridional component of the large scale exchange (grossaustausch). Author compares methods previously proposed by LETTAU, MOELLER and WAGNER. MOELLER's method gives lower values than LETTAU's. WAGNER's method, which gives continuous mean values for a latitude circle, was used in order to compute total monthly, large scale and cyclonic exchange for July 1951 and Jan. 1952. Exchange much more intense in winter than in summer. Exchange coefficients also computed separately for the Atlantic-India region by the methods of WAGNER and LETTAU. *Subject Headings:* **1. Grossaustausch 2. Atmospheric circulation 3. Southern Hemisphere.**—*A.A.*

5.2–102 551.511:551.551

Warner, J. and Bowen, E. G. (*Commonwealth Sci. and Ind. Res. Organization, Australia*), **A new method of studying the fine structure of air movements in the atmosphere.** *Tellus*, 5(1):36–41, Feb. **1953.** 10 figs. **MH-BH**—Bundles of light metal foil ("window") falling at about 100 cm/sec in still air were tracked by radar in Australia after being released from airplanes in or around cumulus clouds or wherever knowledge of the vertical motions or small scale horizontal motions in the air or in clouds is desired. Similar releases have been made from balloons at altitudes above 12 km indicating wind shear as well as vertical speeds. Amount of convergence or divergence near a convective cloud can be determined from relative areas enclosed by positions of several bundles at given moments. Fine structure of wind can be determined for a range of 1 to 100 km by this technique. Should prove useful in studying free air turbulence or lee waves on a large scale (compared to instrumental techniques). *Subject Headings:* **1. Radar vertical motion measurements 2. Metal foil (window) dispertion 3. Turbulence measurement.**—*M.R.*

5.2–103 551.511 551.573

Yih, Chia-Shun, **Laminar free convection due to a line source of heat.** *American Geophysical Union, Transactions*, Pt. 1, 33(5):669–672, Oct. **1952.** 35 eqs. **DLC**—The solutions of the velocity and temperature distribution in the fluid of free convection for the Prandtl numbers 2/3 and 7/3 were arrived at by assuming a line source of heat in an infinite horizontal plane above which the fluid was isothermal and at rest, and the free convection induced by the difference of specific weight due to temperature variation in the fluid. The solutions are applicable to the analogous case of laminar evaporation of water into air. *Subject Headings:* **1. Convection 2. Evaporation theory.**—*W.N.*

5.2–104 551.511.4:551.513.1:532.5

Davies, T. V. (*M.I.T. on leave from Kings College, London*), **The flow of a liquid which is heated from below.** Massachusetts Institute of Technology, Contract AF 19-122-153, General Circulation Project, Scientific Report, No. 12, April 1, **1952.** 35 p. 5 figs., eqs. **DWB**—A liquid is contained in a cylindrical vessel and is subject to heating on the horizontal bottom of the vessel. The problem of the forced flow arising from the heating function is symmetrically arranged about the central axis. It is found that the relative forced flow tends to become zonal in character when the vessel rotates at a sufficiently high angular velocity and is entirely in the direction of the rotation. Special consideration has been given to the effect of the non-linear terms in the hydrodynamic equations. *Subject Headings:* **1. Hydrodynamics 2. Rotating spherical shells 3. Heat transfer. I. Massachusetts Institute of Technology II. Contract AF 19-122-153.**—*Author's abstract.*

GENERAL CIRCULATION

See also: **Geostrophic poleward flux of possible heat** (Pisharoty), 5.2–97; **Flow of liquid heated from below** (Davies), 5.2–104; **Cyclone and anticyclone paths . . .** (Borsos), 5.2–110; **Wind stream in upper air cause of tornadoes** (Carey), 5.2–120; **Summer temp. and general circulation, Sweden** (Wallén), 5.2–141; **Limit between doldrums and trade winds** (Hela), 5.2–169.

5.2–105 551.513:551.543.2

Battin, Richard H., **Investigation of the dynamics of the general circulation.** Massachusetts Institute of Technology, Contract AF 19-122-153, General Circulation Project, Scientific Report, No. 4, Nov. 30, **1952.** 76 p. 15 figs., 17 refs., eqs. **DWB**—A theoretical study of small oscillations in the atmosphere taking into account compressibility and temperature gradient and averaging the equations of motion in the vertical direction for the first approximation. Momentum and energy balances analyzed. General criterion for existence of neutral disturbances: vanishing of the gradient of the product of density and absolute vorticity. Hence, a two-dimensional concept was found to be insufficient, so the study was extended taking into account three-dimensional motions. Neutral oscillations in the upper layers of the atmosphere can be excited by means of vertical motions in the lower layers. The momentum carried by the oscillations can be considered as the fundamental transfer mechanism. Numerical example computed. Figures shows distribution of average momentum transfer, vorticity, zonal winds and of coefficients used in the perturbation equations. Wind vectors and streamlines are plotted for a wave number. *Subject Headings:* **1. Atmospheric circulation 2. Atmospheric oscillations 3. Zonal transfer of momentum. I. Massachusetts Institute of Technology II. Contract AF-19-122-153.**—*A.A.*

5.2–106 551.513.1

Arakawa, H., **Baroclinity along some meridional cross sections through the atmosphere.** *Archiv für Meteorologie, Geophysik und Bioklimatologie, Ser. B,* 6(1):53–58, **1953.** 2 figs., 2 tables, 5 refs., 3 eqs. English, German and French summaries p. 53. **MH-BH**—Author evaluates mean solenoidal field—$\oint dp/\rho$ along a meridional vertical plane. Baroclinity per unit area is tabulated for winter and summer along 80°W between 68.7 and 2.9°N by kilometer steps 0–20 km. Outside tropics it is generally positive in troposphere and negative in stratosphere. An example for Nov. 30, 1946 (straight westerly flow) is illustrated. *Subject Heading:* **1. Baroclinity.**—*C.E.P.B.*

5.2–107 551.513.1:551.58

Eliassen, A. and Hubert, W. E. (*Stockholm Univ.*), **Computations of vertical motion and vorticity budget in a blocking situation.** *Tellus,* 5(2):196–206, May **1953.** 12 figs., 9 refs., 18 eqs. **MH-BH**—The synoptic situation under study is a blocking situation over Western Europe and the North-Eastern Atlantic. Barotropic tendency computations for the 500 mb surface are carried out and compared with the 12 hour observed height change. Tendency computations are also carried out for the mean height (averaged along the vertical with respect to pressure). The vertical motion compatible with the observed local vorticity changes is

computed from the vorticity equation at several levels. The result is in fair agreement with the observed distribution of precipitation and cloudiness. The computations indicate that horizontal divergence and horizontal vorticity advection are of about equal importance in the vorticity budget at 500 mb, whereas the vertical vorticity transport seems to be less important. *Subject Headings:* **1. Blocking action 2. Vertical motion 3. Vorticity.**—*Authors' abstract.*

5.2–108 551.513.1

*Starr, V. P. (*M.I.T.*) and White, R. M. (*U.S.A.F. Cambridge Res. Center*), **Two years of momentum flux data for 31°N.** *Tellus*, 4(4):332–333, Nov. **1952.** 2 tables, 3 refs. **MH-BH**—Previous conclusions of the angular momentum balance of the atmosphere as deduced from actual wind measurements distributed over the Northern Hemisphere are verified with independent data for one additional year 1950–51 (*see items* 2.6–52, June 1951 and 4.2–104, Feb. 1953, *MAB*). Tables with the frequency distribution of all available observations at each level (100 to 1000 mb) for each station and the final results for the period 1949–51 are given. *Subject Headings:* **1. Angular momentum flux 2. Angular momentum balance.**—*I.L.D.*

5.2–109 551.513.2:551.511

Arakawa, H., **Vorticity waves in the tropical latitudes.** *Papers in Meteorology and Geophysics*, Tokyo, 3(4):269–276, March **1953.** 3 figs., 9 refs., 12 eqs. **MH-BH**—It is shown that the hydrodynamic model of vorticity waves proposed by Rossby can be safely applied to the easterly waves in tropical latitudes. A simple explanation for the kinematics of the meandering and the well-developed blocks of the westerlies in the middle latitudes as well as an account for the quasi-horizontal eddy motion and the equatorial westerlies frequently observed in the equatorial area is proposed, using the known solution of the nonlinear vorticity equation. *Subject Headings:* **1. Vorticity theory 2. Easterly waves.**—*Author's abstract.*

ATMOSPHERIC DISTURBANCES

See also: **Anticyclone and record low temp., Central and SE U. S.** (Malkin, Holzworth), 5.2–69; **B.B.C. ionospheric storm warning system** (Benmington, Prechner), 5.2–92; **Stability and structure of disturbances in baroclinic atmos.** (Kuo), 5.2–96; **Temp. frequency distribution in free atmos. and model for frontal analysis** (Berggren), 5.2–146; **Pressure change theory** (Clodman), 5.2–154; **Thunderstorm-precip. growth . . .** (Reynolds), 5.2–192; **Rainy season and meridional movement of polar fronts . . .** (Miyake), 5.2–209.

5.2–110 551.515.1:551.515.7:551.513

Borsos, József, **Ciklon-anticiklon pályák tipusai és gyakoriságuk.** [Types of cyclone and anticyclone paths and their frequencies.] *Időjárás*, 56(9/10):279–284, Sept./Oct. **1952.** 11 figs., 2 refs. Russian and French summaries p. 326. **DLC**—Following Multanovskiĭ's method, kinetic charts are drawn up twice a month at the Long Range Forecast Section of the Hungarian Meteorological Institute. These maps show the origin, path, intensity variations and height variations of cyclones and anticyclones which passed over Europe during the preceding half month. The author explains the symbols he developed for such maps. From Dzerdzeevskiĭ's 13 types of circulation the author selects 8 types applicable to Europe and computes the frequency of each of these types from 18 years' data. The correlation between frequency and duration is also discussed. *Subject Headings:* **1. Cyclones 2. Anticyclones 3. Atmospheric circulation 4. Cyclone tracks.**—*G.T.*

5.2–111 551.515.3

The A B C of tornadoes. *New York Times Magazine*, June 21, **1953.** p. 14–15. photos. **DWB**—Four pictures show: 1) the birth of a tornado, 2) approach, 3) distruction caused by Flint, Mich. tornado and 4) warning. Brief captions explain tornado's mechanism and U. S. Weather Bureau warning system. *Subject Headings:* **1. Tornadoes 2. U. S. Weather Bureau tornado warning system.**—*G.T.*

5.2–112 551.515.3(262)

Cann, J. A. C. and Lamb, H. H., **Waterspout off Stromboli, August 8, 1952.** *Meteorological Magazine*, London, 82(968):56–57, Feb. **1953. MH-BH**—Unusual in Mediterranean so soon after midsummer, probably convective. *Subject Headings:* **1. Waterspouts 2. Mediterranean.**—*C.E.P.B.*

5.2–113 551.515.3(78)

Cook, A. W. (*U. S. W. B. Airport Stn., Denver*), **Summary of tornadoes in Colorado, Wyoming and New Mexico, 1916–51.** *Monthly Weather Review*, 81(3):74–76, March **1953.** 4 figs., 2 refs. **DWB**—Data on the spatial, annual and diurnal distribution of tornadoes in the three states (an area with weak tornado activity) are presented and briefly discussed. Most of the tornadoes occur in the counties east of the Continental Divide. During the 36 years from 1916–1951 there were 120 in the east compared with 20 in the much larger western section (annual number varied from 0 to 11 in the entire area). The majority occurred between noon and 7 p.m., and between May 10 and July 10. The study is offered for public information rather than for forecasters, since the infrequent occurrence of tornadoes in the area virtually precludes their prediction. *Subject Headings:* **1. Tornado distribution 2. Tornado statistics 3. Colorado 4. Wyoming 5. New Mexico.**—*G.T.*

5.2–114 551.515.3(788)

Flavin, John W., Jr. (*Amer. Inst. of Aerological Res.*), **The Denver tornado of May 21, 1952.** *Weatherwise*, 5(5):106–107, Oct. **1952.** 3 figs. **MH-BH**—With the aid of photographs the author describes the development of a small tornado in the cumulonimbus. *Subject Headings:* **1. Tornado clouds 2. Denver, Colorado.**—*I.L.D.*

5.2–115 551.515.3(42):551.576.11

Hawke, Eric L., **Tornado formations over Dartmoor.** *Weather*, 7(12):387, Dec. **1952.** fig. **MH-BH**—Sketches of funnel clouds, not reaching the ground, on Aug. 14, 1952. *Subject Headings:* **1. Tornado clouds 2. Dartmoor, England.**—*C.E.P.B.*

5.2–116 551.515.3(53)

Louis, A. and Rodewald, Martin, **Beobachtung einer Sandhose im Golf von Oman.** [Observation of a dust devil in the Gulf of Oman.] *Wetterlotse*, Hamburg, No. 58:135–137, June **1953. DWB**—Nov. 11, 1952, 2.20–2.54 GMT two dust devils, one lasted ½ hour. Sand was sucked up into a yellow cloud from which it fell again as a sandy rain. RODEWALD comments on its peculiarities. *Subject Headings:* **1. Dust devils 2. Gulf of Oman.**—*C.E.P.B.*

5.2–117 551.515.3

Masuda, Y. (*Met. Res. Inst., Japan*), **On the small perturbations superposing upon the circular vortex. Pt. I and II.** *Papers in Meteorology and Geophysics*, Tokyo, 3(2):138–156, Aug. **1952.** 10 figs., table, 4 refs., eqs. **MH-BH**—From the analysis of vorticity in the case of the typhoon, it is found that small perturbations superpose upon the circular vortex seemingly uniform at a glance, and that they travel as wave-motions. As an attempt to explain this phenomenon, approximate solutions of the perturbation equation of the circular vortex whose basic currents are gradient winds are obtained, and this theoretical result is compared with the analysis. *Subject Headings:* **1. Vortexes 2. Perturbation method.**—*Author's abstract.*

5.2–118 551.515.3(73)

§Showalter, Albert Kenneth (*U. S. W. B. Hydromet. Sec.*), **Synoptic conditions associated with tornadoes.** [1953?] 23 p. 100+ figs. Typescript. **DWB**—Study based on an analysis of over 100 tornado situations, with synoptic charts for over a half of that number. Tornadoes are connected with convergence or frontal lifting in a region of marked horizontal shear. A number of rules related to the surface patterns and the free atmosphere are given for the aid of forecasters. A tornado hypothesis is proposed. The figures include also monthly and annual tornado frequency and selected upper air soundings. *Subject Headings:* **1. Tornado forecasting 2. Synoptic studies 3. Synoptic conditions for tornadoes 4. Tornado frequencies 5. United States. I. U. S. Weather Bureau.**—*A.A.*

5.2–119 551.515.3:551.515.8

United Air Lines, Inc., **Notes on certain tornado and squall line features.** *United Air Lines, Meteorology Circular*, No. 36, April 15, **1952.** 13+p. 10 figs. **DWB**—A review of pressure gradients and wind conditions associated with tornadoes and squall lines with particular reference to instances in which tornadoes passed very close to barographs is presented. Barograph traces show a marked pressure gradient adjacent to but definitely outside the funnel itself. The bases of tornadoes are usually elevated 50–100 ft above the surface. The barograph nose is a useful synoptic element. Lightning might be a very practical means of detecting the presence of a tornado in a thunderstorm. *Subject Headings:* **1. Tornadoes 2. Squall lines 3. Pressure gradient.**—*I.L.D.*

5.2–120 551.515.31:551.513

Carey, Frank (*Associated Press*), **Vast wind stream in upper air blamed for year's tornadoes.** *Evening Star*, Washington, D. C., A-4, June 11, **1953.** illus. **DLC**—The planetary wave train whose central core is the jet stream is suggested as the cause of unusual tornado activity in 1953. A horizontal trough in the planetary wave is said to have developed, pulling cold air down from the Arctic region and thus causing tornado activity. A map showing the positions of the planetary jet wave and of storm tracks over the U. S. is presented. The author's information is based mainly on statements of J. NAMIAS, Chief of Long Range Forecasting Div., U. S. Weather Bureau. *Subject Headings:* **1. Planetary circulation 2. Tornado formation 3. Tornado tracks.**—*G.T.*

5.2–121 551.515.4(43):551.571.36

Mollwo, Hans, **Dampfdruck und Gewitter.** [Vapor pressure and thunder.] *Meteorologische Rundschau*, 6(5/6):96–98, May/June, **1953.** 4 figs., 4 refs. **DWB**—In an investigation into frequency of sultry days, number with vapor pressure of 12 mm+ at Frankfurt a.M. was taken out. Site changes show close relation of humidity to surroundings. Probability of thunder is a function of vapor pressure, zero at 4 mm rising sharply at 12–14 mm to 80% at 17½ mm (Potsdam, 80% at 16½ mm). Maximum frequency of thunder occurs with vapor pressure 4 mm above mean for month. *Subject Headings:* **1. Humidity extremes 2. Thunderstorm frequencies 3. Frankfurt a.M., Germany.**—*C.E.P.B.*

5.2–122 551.515.4(497.1)

Stipaničić, Vladimir I., **Oluje. Osvrt na područje jednog dijela dalm. Primorja is Zagore.** [Thunderstorms. Their occurrence over a territory comprising part of the Dalmatian coast and hinterland.] *Split, Yugoslavia. Hirdografski Institut Mornarice. Meteorološki Otsjek, Vremenske Prilike*, 3(1/2):37–40, July **1948.** 6 figs. **DWB**—General description of the formation and properties of thermal and frontal thunderstorms and brief discussion of their appearance over Dalmatian territory east of Split. *Subject Headings:* **1. Thunderstorms 2. Dalmatia, Yugoslavia.**—*G.T.*

5.2–123 551.515.4(43)

*von Rudloff, Hans, **Die relative Häufigkeit Front- und Wärmegewitterarten in Freiburg/Br. während der Jahre 1934–1949.** [Relative frequency of frontal and convective thunderstorms at Freiburg/Br. during the years 1934–1949.] *Baden. Landeswetterdienst, Jahresbericht mit Abhandlungen*, **1949.** p. 64–67. 3 figs., 2 tables, 2 refs. **DWB.** Also: **Mittlerer Dampfdruck vor Front- und Wärmegewittern und mittlere Niederschlagsergiebigkeit während der Gewitter in Freiburg. Mittlere Höchsttemperaturen vor den Gewittern.** [Mean vapor pressure before frontal and convective thunderstorms and mean precipitation amount during storms in Freiburg. Average of maximum temperatures before thunderstorms.] *Ibid.*, p. 68–72. 4 tables, 2 refs. **DWB**—Frontal and local thunderstorms occurring at Freiburg/Br. during the period 1939–1945 were investigated with reference to their monthly and daily frequencies and the origin or direction of flow of each type of thunderstorm. In all months frontal thunderstorms were more frequent than heat thunderstorms. The latter occurred usually in the afternoon between 1400 and 1800 hours. The former are more evenly distributed during the day. Southwest and west frontal thunderstorms were found most fre-

quent. The annual variations in the direction of origin of frontal and heat thunderstorms are analyzed. *Subject Headings:* **1. Thunderstorm frequencies 2. Freiburg, Germany.**—*I.L.D.*

RADIATION AND TEMPERATURE

RADIATION

See also: **Reduction of atmos. transmission coefficients to uniform mass** (Chkhaidze), 5.2–27; **Radiation classification** (Ångström), 5.2–132; **Twilight and airglow studies,** 5.2–295.

5.2–124 551.521

Bernhardt, Fritz, **Die sekundär-diffuse Strahlung in einer Rayleigh-Atmosphäre. II.** [The secondary diffuse radiation in a Rayleigh atmosphere. II.] *Zeitschrift für Meteorologie,* 7(3):78–85, March **1953.** 8 figs., 4 refs. **MH-BH**—A continuation of Pt. I. (*see item* 4.7–89, July 1953, *MAB*). Using the formula developed in the first paper, the author calculates the secondary diffuse radiation for the solar zenith distances $z=45°$ and $z=75°$ and the results are compared with the measurements of G. Retz and Hinzpeter and with the calculations of T. Sato. *Subject Headings:* **1. Diffuse radiation 2. Rayleigh atmosphere.**—*Transl. of author's abstract.*—*I.L.D.*

5.2–125 551.521 551.508.21

California. University at Los Angeles. Dept. of Engineering, **Thermal radiation project.** Contract N7-onr-295, T.O.I, Final Report, Sept. 1, **1950.** 116+p. figs., table, refs., eqs. **DWB**—Complete summary of all work performed on project from May 1, 1947 to Sept. 1, 1950. Includes one section reviewing previously reported accomplishments and 14 sections reporting new results including: spectral radiation characteristics of materials; review of radiation theory and properties of metals; rotating two-radiometer device for determining low temperature emissivity and surface temperature of materials; summary of knowledge of thermal radiation constants; development of ideal radiation between 1000 and 1600°R, and 1500 to 2000°R, heat meter calibration stand; weather station for radiation observations; ultraviolet meter for measuring irradiation at earth's surface; gas radiometer; solar absorptivity meter for measurements of metals and paints; transmission of radiation, three absorbing but nondiffusing media with plane parallel boundaries. All equipment is described and illustrated in detail by photographs and wiring or line diagrams. Performance or calibration charts, theory, references and nomograms used are also included. *Subject Headings:* **1. Radiation research 2. Radiation instruments. I. Dunkle, R. V. II. Snyder, N. W. III. Possner, L. IV. Test, A. J. V. Hisdal, E. VI. Gier, J. T. VII. Contract N7-onr-295, T.O.I.**—*M.R.*

5.2–126 551.521 551.521.3 551.501

*Ukraintsev, V. N., **Vychislenie mesiachnykh summ priamoĭ solnechnoĭ radiatsii na gorizontal'nuiu poverkhnost' dlia shirot subtropicheskoĭ zony.** [Calculation of monthly totals of direct solar radiation on a horizontal surface in latitudes of subtropical zones.] (In: Leningrad. Agrogidrometeorologicheskiĭ Institut, **Materialy po agroklimaticheskomu raĭonirovaniiu subtropikov SSSR.** [Materials on the agro-climatic regionalization of the subtropics in USSR.] Leningrad, Gidrometizdet., **1938.** Vol. 2, p. 5–12, 7 tables, eqs.) **DLC**—For the computation, the method of S. I. Savinov has been used. The data on total radiation given by Angot were re-computed according to the new solar constant = 1.88, and presented in tables for 2° latitude intervals and for the transparency coefficients $P=0.7$; 0.8; 0.9. The monthly totals of direct solar radiation received by a unit of horizontal surface on cloudless days are given according to actinometric observations for 6 stations, and the effective coefficients of transparency derived. The last part is devoted to the computation of the monthly quantities of scattered radiation. *Subject Headings:* **1. Solar radiation 2. Scattering of light 3. Methods of computation 4. Soviet Subtropics.**—*N.T.Z.*

5.2–127 551.521.1 551.590.21

†Abbot, Charles G. (*Res. Assoc., Smithsonian Inst.*), **Solar variation, a leading weather element.** *Smithsonian Miscellaneous Collections*, 122(4), Aug. 4, **1953.** 35 p. 22 figs., 3 tables, 32 refs. *Smithsonian Institution, Publication*, 4135. **DLC**—The author maintains that: 1) statistically derived results may be accepted without a supporting theory; 2) a conclusion may be accepted as a working hypothesis without being rigidly proven or 3) if phenomena which stem from a related source are harmonious with the basic proposition. As a working hypothesis he combines 5 propositions and shows how they are supported by correlations with 5 other phenomena. The propositions concern solar radiation variability with a period of $22\frac{3}{4}$ years or subordinate periodicities related to $22\frac{3}{4}$ years. Also solar radiation variations strongly affect weather (temp., precip., etc.) irrespective of periodicities, and lastly the weather responds strongly to the regular periodic solar variations (solar faculae, sunspots, solar flocculi, magnetic storms and ionospheric changes are the phenomena showing high correlation with the above). A large amount of graphic data is presented in support. *Subject Headings:* **1. Solar radiation variations 2. Solar influences 3. Correlations.**—*M.R.*

5.2–128 551.521.1:621.47

Bullard, E. C., **Utilization of solar energy.** *Meteorological Magazine*, London, 82(975): 276–277, Sept. **1953. DWB**—Summary of a lecture given on May 20, 1953 at the Institution of Electrical Engineers. Average power available only 0.1–0.2 Kw/m² and no way of obtaining a large amount of power from solar energy can be envisaged, but applications in tropics requiring little energy gave possibilities. *Subject Heading:* **1. Solar heating.**—*C.E.P.B.*

5.2–129 551.521.1:595.7

Pepper, J. H. and Hastings, Ellsworth (*Montana State College*), **The effects of solar radiation on grasshopper temperatures and activities.** *Ecology*, 33(1):96–103, Jan. **1952.** table, refs. **DWB**—A brief review of the thermal balance of insects is given. The effect of direct solar radiation on the body temperatures of several species of grasshoppers was investigated by means of a nonreflecting light cone. The grasshoppers were suspended inside the black body under conditions of minimum conduction, convection and evaporation; the sunlight intensity was measured with an Eppley pyrheliometer; temperature gradients across body of insects and body temperatures were measured with thermocouples. The increase in body temperature per gr. cal./cm² per min. of radiation varied with the air temperature and with the light intensity. Species differed in their body temperatures when exposed to similar light intensities. Body temperature of grasshoppers in their habitats always exceeded that of surrounding air; the difference ranged from 5°C to 11°C and was the result of solar radiation. *Subject Headings:* **1. Solar radiation effects 2. Grasshoppers 3. Insect temperatures.**—*I.L.D.*

5.2–130 551.521.1

Scheer, Georg, **Über Aenderung der Globalbeleuchtungsstärke durch Belaubung und Horizonteinengung.** [Changes in global light intensity by foliage and horizon contraction.] *Wetter und Leben*, 5(3/4):65–71, May **1953.** 2 figs., 5 tables, 19 refs. **MH-BH**—Measurements of global light intensity and zenithal light intensity carried out in connection with phenological observation on birds indicated good agreement with earlier observation on zenithal light intensities but lower values for global light intensities. Differences in global light intensity depended upon differences in the location of the instrument in the vicinity of varying foliage. Analysis of the annual variation of global light intensity shows slight variation in "pine forest" but considerable variations in intensity in other locations. Quantitative analysis of the dependence of global light intensity upon horizon obstruction and horizon elevation is carried out. *Subject Headings:* **1. Solar radiation intensity 2. Phenological observations.**—*I.L.D.*

5.2–131 551.521.1:620.91

Utilization of solar energy. *Research*, London, 5(11):522–529, Nov. **1952.** 3 tables, 19 refs. **DLC.** Review in: *Geofisica i Meteorologia*, Genoa, 2(1):22–23, Jan./Feb. **1953. DWB**—Prospects for use of solar energy as a major source of power or heat are conservatively

outlined. KIMBALL's data on energy received on a horizontal surface for 20° belts of latitude N. and S. for clear or cloudy days in June, Dec. and year show that maximum energy received would be 1 kw/m² and probably not more than 0.1 or 0.2 kw/m² could be used in most places. Special problems in respect to water heating, cooking, refrigeration, power, fuel production (photosynthesis, for instance) and distillation of water are discussed. A cook stove, air conditioner for the tropics, hot water heater and steam engine are possible immediate developments. *Subject Headings:* **1. Industrial Meteorology 2. Solar energy utilization. I. Great Britain. Dept. of Scientific and Industrial Research.**—*M.R.*

5.2–132 551.521.11(485) 551.521.14

Ångström, Anders, **On a classification with regard to daily radiation income from sun and sky.** *Indian Academy of Sciences, Proceedings, Sec. A*, Bangalore, 37(2):234–236, Feb. **1953.** table. **DLC**—In evaluating radiation records for climatological or correlation purposes a system of classifying days according to type of insolation as determined from pyrheliometer records of various types was found useful. The 5 types of days are: I. Clear (decreases in radiation <5% in most cases); II. Partly clear (a) decrease between 5 and 25% and (b) generally >25%; III. Morning cloudy, afternoon sunshine; IV. Afternoon cloudy, morning sunshine prevailing and V. No sunshine (a) radiation highly variable, (b) radiation low and steady. An example based on Stockholm records 1947–1952 for June and Dec. shows relative percentage frequency of types. *Subject Headings:* **1. Radiation classification 2. Cloudiness classification 3. Stockholm, Sweden.**—*M.R.*

5.2–133 551.521.11(548)

*Balasubramaniyan, C. and Jayaraman, M. V. (*Agri. Col. and Res. Inst., Coimbatore*), **A note on duration of sunshine at Coimbatore.** *Indian Journal of Meteorology and Geophysics*, 4(1):107–110, Jan. **1953.** 5 tables, 3 refs. **MH-BH**—Using data on the number of hours of bright sunshine from records made at the Agricultural College from 1929 to 1935 and at the Cotton Breeding Station from 1938 to 1950 (20 years of data), 66 intermonthly correlations were worked out. Using strict tests of significance (SAVUR and GOPALA RAO, 1932) for probability of 5% chance for the highest of a number of correlation coefficients, only 3 proved significant. Interweekly correlations were also worked out and only 5 considered significant at 5% level. Details of these seemingly significant intercorrelations are given *in extenso* in tables. Significant positive correlations were found between duration of bright sunshine and maximum temperature for 6 of 12 months of the year. *Subject Headings:* **1. Sunshine duration 2. Statistics in meteorology 3. Correlation coefficients 4. Coimbatore, India.**—*M.R.*

5.2–134 551.521.13

Wegener, Kurt (*Graz*), **Bemerkungen zur Solarkonstanten.** [Notes on solar constant.] *Zeitschrift für Meteorologie*, 7(5):152–153, May **1953.** Reply by J. Georgi, p. 153–155. 3 refs. **MH-BH**—A reply to J. GEORGI's criticism (*Zeit. für Met.*, 5:136–139, 1951. See item 2.11–30, Nov. 1951, *MAB*) of the author's (*Geofisica Pura e Applicata*, 16:16–18, 1950, see item 2.7–38, July 1950, *MAB*) investigation of the existing errors in the pyrheliometric measurement of the solar constant. WEGENER maintains that GEORGI's criticism is valid only in that the actual radiation of the exposed measuring instrument was not considered hitherto but that the error in stating that the radiation of the exposed measuring instrument is $\sigma T^4/f$, where f is the exposed surface. GEORGI replies that the error resulting from actual radiation of measuring instrument has been found to be negligible and then discusses the definition of various terms in solar constant measurement and gives a detailed justification of his criticism. *Subject Headings:* **1. Solar constant. I. Georgi, J.**—*I.L.D.*

5.2–135 551.521.14

Dirmhirn, Inge, **Einiges über die Reflexion der Sonnen- und Himmelsstrahlung an verschiedenen Oberflächen (Albedo).** [The reflection of solar and sky radiation on different surfaces (albedo).] *Wetter und Leben*, 5(3/4):86–94, May **1953.** 10 tables, 14 refs. **MH-BH**—Daily means of albedo for water surfaces, ice and snow surfaces, for green vegetation stands,

for soil, sand and for rocks are given. The tables give data on: 1) reflection of solar radiation and of sky radiation from water surfaces with slight wave movement at different sun elevations, 2) daily means of albedo of water surfaces for solar and sky radiation in the case of cloudless skies, 3) daily means of the albedo of water surfaces for global radiation during varying degrees of cloudiness, 4) albedo for various types of snow and ice surfaces, 5) albedo of global radiation for green fields and forests, 6) albedo of a horizontal meadow near Vienna for every month of the year and 7) and albedo of sandy, clay and plowed soil and of dark and light rocks. *Subject Headings:* **1. Albedo 2. Radiation.**—*I.L.D.*

5.2–136 551.521.14

†Fritz, Sigmund, **Scattering and absorption of solar energy by clouds. 1953.** Thesis [*Sc.D.*] Massachusetts Institute of Technology, **1953.** 164 p. 12 figs. (photostat), 3 tables, 46 refs., eqs. Biographical note and list of author's publications appended. Carbon of typescript. **DWB**—Calculations of reflection and absorption of solar energy by atmospheric clouds undertaken. A simple model which retains all of the most important physical aspects is achieved by dividing the cloud into finite layers. In Pt. I the techniques are developed for a model in which absorption is negligible. Computed albedos and transmissions are compared with other theoretical results and with observations. Pt. II is devoted to computations of absorption in clouds. Formulas are observed for absorption of direct beam, from the forward-scattered beam and during the diffusion process. From these totals, absorptions and albedos are computed for 7 different infinite clouds. Results indicate that absorption by water vapor is ½ total absorption. Ice crystal clouds and stratified deep clouds should often absorb like continuous water drop clouds. *Subject Headings:* **1. Albedo of clouds 2. Absorption by clouds 3. Atmospheric absorption.**—*From author's abstract.*

5.2–137 551.521.14

*Sauberer, Franz, **Beiträge zur Kenntnis des Strahlungsklimas von Wien.** [Contribution to the knowledge of the radiation climate of Vienna.] *Wetter und Leben*, 4(11/12):187–192, Dec. **1952.** 8 tables, 8 refs. **MH-BH**—The individual components of the radiation balance on a horizontal surface on the basis of radiation measurements made at the Hohe Warte in Vienna. The author gives data on mean monthly cloudiness and sunshine duration for the periods 1901–1930 and 1881–1940, respectively; mean monthly means of total daily solar radiation upon a horizontal surface, monthly means of daily totals of sky radiation, monthly means of global radiation in cal/cm² for various amounts of sunshine duration; monthly means of daily totals of counter radiation at elevation of 200 m above sea level for various amounts of sunshine duration, mean monthly daily totals of outward radiation from snow surfaces, soil layer and water surfaces (Danube), mean monthly outgoing radiation balance from the same surfaces; mean albedo values for solar and sky radiation for the Danube and meadow surfaces; and the monthly means of daily values of the radiation balance of the Danube in Vienna and of a meadow. *Subject Headings:* **1. Radiation balance 2. Radiation climates 3. Albedo of snow 4. Albedo of water surfaces 5. Albedo of soil 6. Vienna, Austria.**—*I.L.D.*

AIR TEMPERATURE

See also: **Potential temp. and extreme value of probability function** (Demiańczuk), 5.2–29; **Calculation of atmos. temp.** (Grandmontagne), 5.2–31; **Anticyclone and record low temp., Central and SE U. S.** (Malkin, Holzworth), 5.2–69; **Record low temp., Mid-Atlantic and E. Central U. S.** (Parry, Roe), 5.2–70; **Surface-water temp. . . .** (Hendricks), 5.2–153; **Frost smoke and unusually low temp.** (Hay), 5.2–198; **Winter 1948–49, Great Plains** (Calef), 5.2–219; **Vertical temp. gradient in beech forest** (Christy), 5.2–265.

5.2–138 551.524:59

George, Wilma, **Some animal reactions to variations of temperature.** *Endeavour*, London, 12(46):101–105, April **1953.** 4 figs., 8 refs. **DWB**—Environmental temperature influences the metabolic activities of animals. Among land vertebrates a negative correlation has been established between mean temperature and number of species in the clan; this is also true for the fauna of tropical water. Adaptations to cold and warm temperatures on the part of cold

blooded and warm blooded animals, extent of temperature balance of individual species, variations in body size with temperature among warm blooded vertebrates, change in melanin content with temperature within a species and the effect of temperature upon gene mutation and gene expression and chromosomes are some of the topics covered. *Subject Headings:* **1. Temperature effects 2. Physiological climatology.**—*I.L.D.*

5.2–139 551.524:551.586

*Jesser, E., Dimitz, L. and Wilfinger, H. (*Vienna*), **Die 14-Uhr-Temperatur, ein wichtiger Klimafaktor für das Pflanzenleben.** [The 14 o'clock temperature as an important climatic factor for plant life.] *Wetter und Leben*, 5(3/4):57–64, May **1953.** fig., 2 tables, 13 refs. **MH-BH**—The inadequacy of the mean annual temperature as a climatic factor for assessing plant growth conditions is stressed. For various stations in Austria the authors show that the mean 14 o'clock temperature of the period May–July has higher correlation with plant growth as reflected in yields of wheat, maize, fruit, etc. than mean daily temperature for the same period; the 14 o'clock temperature corresponds approximately to the mean of the six concurrent hours of the day. A table giving mean 14 o'clock temperature of the months April–Aug. for the period 1881–1930 for selected stations in Austria is given and the method of constructing a 14 o'clock isotherm chart for Austria is discussed. *Subject Headings:* **1. Temperature effects 2. Plant growth 3. Agricultural meteorology 4. Austria.**—*I.L.D.*

5.2–140 551.524:551.506.3(471.1)

Johansson, Oscar V., **Finlands sommartemperatur.** [Summer temperature of Finland.] *Finska Vetenskaps-Societeten, Helsinki, Bidrag till Kännedom af Finlands Natur och Folk*, 93(2), **1949.** 39 p. 4 figs., table, refs. **DLC**—The mean temperature data for the International "Normal Period' 1901–30 are worked up for 143 stations in Finland and compared in all sorts of ways with other data—regional, secular, foreign (152 stations in Sweden). A cross section or profile from Helsinki to Tammerfors, comparing 1931–37 with 1901–30, shows a consistent difference of +2°C regardless of location or height above sea level (flat country)! KERÄNEN's isothermal charts of mean summer temperature in Finland are included. *Subjec. Headings:* **1. Summer temperatures 2. Normal period (1901–1930) 3. Isothermal charts 4. Finland.**—*M.R.*

5.2–141 551.524:551.513

Wallén, C. C. (*Stockholm Univ. and Sweden Met. and Hydro. Inst.*), **Variability of summer temperature in Sweden and its connection with changes in the general circulation.** *Tellus*, 5(2):157–178, May **1953.** 10 figs., 4 tables, 5 eqs. **MH-BH**—In order to investigate long periodic fluctuations in the interannual variability of summer temperature, the author used the method of moving standard deviation, taking into consideration the influence of trends in the original temperature curve. This procedure was applied to temperature records for 15 stations in Sweden "and the changes in variability in these stations are treated." Also "the actual variability during the period 1920–39 is determined and compared to the interdiurnal variability of the same period. Frequency fluctuations of different circulation patterns over southern Scandinavia based upon the catalog of daily weather situations during the period 1881–1950 published by the German Weather Service of the U. S. Zone in 1952. These fluctuations are compared with changes in the summer temperature and its variability in S. Sweden during the same period. It is found that the recent rise of summer temperature has been connected with a definite decrease in frequency of south meridional situations over Europe and with an increase of south and warm meridional cases as well as zonal situations. High variability seems to be connected with meridional circulation, low variability with zonal circulation." The fluctuations in variability of the Stockholm summer temperature since 1756 are analyzed. *Subject Headings:* **1. Summer temperature variability 2. Atmospheric circulation 3. Zonal circulation 4. Sweden.**—*From author's abstract.*

5.2–142 551.524.1:551.584.2

Howe, G. Melvyn, **Observations on local climatic conditions in the Aberystwyth area.** *Meteorological Magazine*, London, 82(975):270–274, Sept. **1953.** 3 figs., 9 refs. **DWB**—To investigate local temperatures round Aberystwyth, Wales, 22 students made ¼ hourly whirling

psychrometer readings from 11 p.m. to 5 a.m., Nov. 28–29, 1952, under anticyclonic conditions. Charts for 11 p.m. and 5 a.m. show cold air lake in inland valley and sections show temperature changes at 2 hour intervals. Other cases of local distribution accompanying sea mist are described. *Subject Headings:* **1. Temperature microvariations 2. Local climatology 3. Aberystwyth, Wales.**—*C.E.P.B.*

5.2–143 551.524.3:551.525.2 551.509.532

Berliand, M. E., **Izmenenie temperatury v prizemnom sloe atmosfery i predskazanie zamorozkov.** [Change of temperature in the atmospheric layer near the ground and frost forecasting.] *Akademiia Nauk, SSSR, Izvestiia, Ser. Geofizicheskaia*, No. 2:166–182, **1953.** 3 figs., 10 refs., eqs. **DLC**—A general solution of the equations of the change of temperature in the layer near the ground owing to heat exchange between soil and air is presented. It is shown that in the layer of air near the ground there is almost always a quasistationary regime of temperature change and this condition is used for simplifying the problem. Formulas are developed and tables are constructed for predicting atmospheric temperature at different heights at night (especially for forecasting frost); the predicted and empirical data are compared. Extreme cases of solution of the problem for large and small time intervals are examined. Formulas for determining the change of air temperature for a given temperature of the underlying surface and formulas for predicting the temperature of bare soils, of soils under snow cover on the basis of changes of air temperature are given. *Subject Headings:* **1. Air-soil heat exchange 2. Soil surface temperatures 3. Frost forecasting.**—*Trans. of author's abstract.—I.L.D.*

5.2–144 551.524.37

*Green, Berton B. (*U. S. W.B.A.S., Wichita, Kans.*), **Frost data in the Wichita, Kansas area.** March 28, **1951.** 3 p. tables. Typescript. **DWB**—Two useful tables are given, one for last killing frost in spring and one for the first in autumn. The number of times in 64 years (1888–1952) of record that the last (or first) frost occurred on given dates (March 10 to May 15 and Sept. 23 to Nov. 22) is first tabulated. Then the number of years on or after (or before in fall) the given date and, finally, the percentage chance of a killing frost after (or before) the given date are tabulated in order to be able to answer questions on the probability of frost in the transition seasons. The 50% probability occurs on April 9 and Oct. 27, respectively, whereas the "average" date would be 4 days later in spring and 4 days earlier in autumn. *Subject Headings:* **1. Killing frost probabilities 2. Frost data 3. Wichita, Kans. I. U. S. Weather Bureau.**—*M.R.*

5.2–145 551.524.4:551.586:63

Nakamura, S. (*Nat. Inst. of Agri. Sc., Tokyo*), **Studies on the height limit of paddy field in Japan. (1) On the relation between height limit and air temperature in growing season of rice plant.** *Journal of Agricultural Meteorology*, Tokyo, 7(2):62–64, June **1952.** 2 figs., 5 refs. English summary p. 64. **MH-BH**—On the basis of 149 observations made in Japan the author established the following empirical relationship between average air temperature from May–Oct. (T), φ = latitude and h = height (in km):

$$T = 21.5 - 0.641(\varphi - 36.5) - 0.017(\varphi - 36.5)^2 - 4.726h.$$

The temperature of the height limit at Hokkaido is about equal to the temperature at sea level between 44°N and 45°N latitude; that of the North-East division to the sea level temperature between 41°N and 43°N latitude; that of the Central division between 38°N and 41°N latitude and that of the South division between 33°N and 36°N latitude. The minimum of the mean air temperature from May to Oct. for growing rice is 14°C, but the actual height limit is not equal always to the height which $T = 14$ gives when substituted in the empirical formula. *Subject Headings:* **1. Rice fields 2. Temperature distribution 3. Topographic effects.**—*I.L.D.*

5.2–146 551.524.7 551.515.8

Berggren, Roy (*Uppsala Univ.*), **On temperature frequency distribution in the free atmosphere and a proposed model for frontal analysis.** *Tellus*, 5(1):95–100, Feb. **1953.**

5 figs., table, 9 refs. **MH-BH**—Following the method used by McIntyre (1950), the author constructs frequency histograms for temperatures at 250, 200, 170 and 150 mb at Lerwick and Aldergrove, and for 700, 500, 300, 200 and 150 or 100 mb at Tatoosh Island, Washington and Miami, Fla., showing a sharp single maximum at 250 or 300 mb at all stations, and a tendency towards a secondary maximum at 200, 170 and 150 mb except at Miami where the secondary maximum occurred only at 100 mb. This is explained by the higher, colder troposphere of tropical air compared to the polar air masses which prevail over the northern stations, the fact that Miami is almost always in tropical air above 700 mb, and the fact that both polar and tropical air have the same temperature at the 300 or 250 mb level. The author concludes that the (sloping) baroclinic field in the troposphere and lower stratosphere are demonstrated by this frequency analysis. *Subject Headings:* **1. Upper air temperature frequencies 2. Tropopause temperature variations 3. Frontal analysis 4. Lerwick, Scotland 5. Aldergrove, Ireland 6. Tatoosh Island, Washington 7. Miami, Florida. I. McIntyre, D. P.**—*M.R.*

SOIL TEMPERATURE

See also: **Heat transfer at air-earth interface** (Warner, Bowen), 5.2–102; **Temp. changes in air layer near ground . . .** (Berliand), 5.2–143.

5.2–147 551.525.2

Drimmel, Julius, **Über theoretische Formeln zur Berechnung der nächtlichen Abkühlung der Erdoberfläche und über ihre Anwendungsmöglichkeiten.** [On theoretical formulas for calculating nocturnal cooling of the earth's surface and their application.] *Archiv für Meteorologie, Geophysik und Bioklimatologie, Ser. B,* 5(1):18–40, **1953.** 2 figs., 17 refs., 34 eqs. German, English and French summaries p. 18–19. **MH-BH**—New cooling formulas are found for surface with constant or decreasing effective radiation, including a relation between temperature distribution in the soil and potential temperature in the atmosphere. A constant ratio of heat exchange within soil is confirmed theoretically. The rise of temperature after sudden cooling is explained quantitatively. On clear nights further cooling after sunrise is improbable. The effect of the decrease of outward radiation during the course of clear nights is discussed; the effect of dew formation is found to be negligible. *Subject Headings:* **1. Soil surface temperatures 2. Nocturnal cooling measurement.**—*C.E.P.B.*

5.2–148 551.525.2

Gloyne, R. W., **Radiation minimum temperature over a grass surface and over a bare-soil surface.** *Meteorological Magazine,* London, 82(975):263–267, Sept. **1953.** fig., 5 tables, 10 refs. **DWB**—Comparative observations of minimum temperature on grass, just over bare sandy loam, and in shelter at Starcross, Devon, showed that bare soil minimum averaged 1–4°F higher than grass, difference being 2–5°F on radiation nights and exceeding 7°F on extreme nights. Difference bare soil-grass averaged about half difference between minima in shelter and on grass. Ground frosts were less frequent on bare soil. *Subject Heading:* **1. Surface temperatures.**—*C.E.P.B.*

5.2–149 551.525.4:631.4

Lettau, Heinz, **Über die Ermittlung der Temperaturleitfähigkeit des Untergrundes mittels harmonischer Analyse von Bodentemperaturvariationen.** [On the calculation of the thermal conductivity of the soil by harmonic analysis of soil temperature variations.] *Meteorologische Rundschau,* 6(5/6):99, May–June **1953.** 3 eqs. **DWB**—A formula is given for calculating conductivity from observations at different levels, in which the conductivity has a diurnal variation. It can be applied also to a turbulent atmosphere. *Subject Heading:* **1. Soil conductivity.**—*C.E.P.B.*

5.2–150 551.525.5

Black, Robert F., **Permafrost—a review.** *New York Academy of Sciences, Transactions, 2nd Ser.,* 15(5):126–131, March **1953.** fig., table. **DLC**—A review of the present status of our knowledge on permafrost. The scope of research activities in the United States and in the U.S.S.R. is described briefly. The distribution of permafrost over the earth, its char-

acteristics as represented by temperature gradients; its composition (ice and water content, nature of ice crystals); ice wedges; its genesis and its effect upon geological structure, and its biological and engineering significance are discussed. A map showing the distribution of permafrost is included. *Subject Headings:* **1. Permafrost distribution 2. Permafrost research 3. United States 4. U.S.S.R.**—*I.L.D.*

LAKE AND POND TEMPERATURES

5.2–151 551.526.8(47)

Bogoslavskiĭ, B. B., **O termicheskom rezhime ozera Glubokogo v bezlednyĭ period.** [Thermal regime of Lake Glubokoe during non-glacial period.] *Voprosy Geografii*, No. 26:96–117, **1951.** 7 figs., table, refs. p. 116–117, 5 eqs. **DLC**—Temperature observations carried out since 1907 with interruptions. Observations from May to Oct. 1946 discussed in detail, giving a complete picture of different thermal processes involved, computing the march of heat reserve, mean temperature, stability, work necessary for heating the lake from 4°C to the given temperature. Work of wind and turbulent exchange calculated. Comparisons made with lakes Luntskoe and Beloe. *Subject Headings:* **1. Lake temperatures 2. Lake Glubokoe, U.S.S.R.**—*A.A.*

5.2–152 551.526.8(436)

Eckel, O., **Zur Thermik des Neusiedlersees.** [Thermal characteristics of the Neusiedler Lake.] *Wetter und Leben*, 5(3/4):72–78, May **1953.** 6 tables, 13 refs. **MH-BH**—Data for 1951 on temperature stratification consisting of mean monthly temperature difference between surface and bottom water at 7, 14 and 21 h, diurnal range of mean and extreme surface temperatures for every month and comparative data with other Alpine lakes are given. A discussion of ice formation on Neusiedler Lake is presented on basis of data for 1928–1950. *Subject Headings:* **1. Lake temperatures 2. Temperature stratification 3. Neusiedler Lake, Austria.**—*I.L.D.*

5.2–153 551.526.8:551.524.3

Hendricks, E. L. (*U. S. Geological Survey*) and Goodwin, Melvin H., Jr. (*U. S. Public Health, Newton, Ga.*), **Observations on surface-water temperatures in limesink ponds and evaporation pans in southwestern Georgia.** *Ecology*, 33(3):385–397, July **1952.** 9 figs., 4 tables, 3 refs. **DLC**—Studies of surface-water temperature in ponds and their relationship to the air temperature were undertaken in connection with studies of mosquito breeding places. Tables with average results of observations made in 1946 are given for three ponds and evaporation pans. The mean water temperature for a particular week is $Tw = a + bT_0 + cT_1$; T_0—air temperature for the same week; T_1—for the preceding week; a, b, c—constants. b increases and c decreases with decreasing dimensions of the water body. *Subject Headings:* **1. Pond temperatures 2. Evaporation pans.**—*A.A.*

PRESSURE AND WIND

PRESSURE

See also: **Tool for quantitative study of air mass modification** (Wadsworth), 5.2–61; **Dynamics of general circulation** (Battin), 5.2–105.

5.2–154 551.543:551.515.13

Clodman, Joseph (*Montreal Airport, Dorval, Quebec Prov.*), **The current status of the theory of pressure change with particular reference to the steering of surface lows.** *Canada. Meteorological Div., Cir.* 2101, Tec. 114, May 6, **1952.** 18 p. 21 refs., eqs. **DWB**—A review of literature on theoretical and empirical investigations. The classical approach, the steering features of the advection and divergence terms, the vorticity approach, vertical distribution of pressure change, stability effects and the pressure change mechanism are discussed. Lows usually deviate to the right of the steering current. *Subject Headings:* **1. Pressure changes 2. Steering of surface lows.**—*A.A.*

5.2–155 551.543:612.27:016

†Kenk, Roman and Nall, Mabel Lexton (*Library of Congress*), **Physiology of the circulation of the brain: an annotated bibliography, 1938–1948.** *Physiological Reviews*, v. 32, Supplement No. 1, July **1952.** 437 p. **DLC**—In this remarkable systematic and well indexed bibliography will be found at least 50 annotated references to literature on the effect of *atmospheric pressure* on the functioning of the brain, and several more under the headings Environmental Temperature, Hypoxemia, etc. No evidence of studies on the effect of high absolute humidity or vapor pressure on the brain is found in the subject index. Articles on the effects of gaseous constituents of the atmosphere such as O_2, CO_2, CO, etc. on the circulation of the brain are also included. *Subject Headings:* **1. Physiological meteorology 2. Atmospheric pressure effects on brain 3. Brain circulation 4. Physiology bibliographies.**—*M.R.*

5.2–156 551.543.3

Lewis, R. P. Waldo and McIntosh, D. H., **Recurrence tendencies in Kew surface pressure.** *Meteorological Magazine*, London, 82(976):301–304, Oct. **1953.** fig., table, 2 refs. **MH-BH**—Tabulation of surface pressure at Kew Observatory, London, from 6 days before to 74 days after peaks or troughs of pressure showed no relations which cannot be due to chance. *Subject Heading:* **1. Pressure waves.**—*C.E.P.B.*

5.2–157 551.547:551.587

*Great Britain. Meteorological Office, **100–500 mb thickness North America to Europe 1946–51. Monthly means and extremes.** *Great Britain. Meteorological Office, Meteorological Report*, No. 13, **1953.** 38 p. 36 figs., 2 refs. M.O. 535h. **GB-MO**—Monthly mean charts give average thickness lines Oct. 1946–Sept. 1950 and limiting N and S positions reached by certain standard thickness lines. *Subject Headings:* **1. Relative topography 2. Upper air studies.**—*C.E.P.B.*

5.2–158 551.547.1

*Dieterichs, Heinz, **Notas sobre altimetria barométrica en los tropicos, con 4 tablas de correcciones adjuntas.** [Notes on barometric altimetry in the tropics, with 4 tables of corrections.] *San Salvador. Instituto Tropical de Investigaciones Científicas, Comunicaciones*, No. 4:22–23, Oct. **1952.** tables, 2 refs. Abstracted from reprint. **MH-BH**—Since the "normal atmosphere" is based on conditions in moderate latitudes, new tables for barometric altimetry under tropic conditions were prepared, assuming a ground temperature of 26°C a pressure of 760 mm Hg for (sea level) and a temperature lapse rate of −6.5°C per km. *Subject Headings:* **1. Altimetry 2. Tropical regions.**—*A.A.*

5.2–159 551.547.2

Primault, Bernard (*Zurich*), **Un nouveau réducteur barométrique.** [A new barometric reducer.] *Switzerland. Meteorologische Zentralanstalt, Annalen*, v. 88, **1951.** 5 p. appended to Anhang No. 7, 5 figs., eqs. **DWB**—A simple, but precise set of correction scales have been constructed (and are described and illustrated) to attach to a mercurial barometer so that the station pressure, the altimeter correction and the sea level barometric pressure can be read off directly, without a vernier, and without recourse to correction tables. Only 3 settings are required for the entire operation: 1) place the line on the top of the meniscus of the mercury, 2) set the temperature of the mercury column on one scale and 3) set the station temperature on another scale. The mean or standard sea level temperature can be set for the day or month or season depending on the system used for reduction to sea level. At least 7 operations out of 15 are eliminated when frequent barometer readings are necessary, as at airports. *Subject Heading:* **1. Barometer reduction.**—*M.R.*

5.2–160 551.547.2:551.524

Schüepp, M., **Vergleich der vershiedenen Methoden der Luftdruckreduction auf das Meeresniveau.** [Comparison of different methods for reduction of atmospheric pressure to sea level.] *Wetter und Leben*, 5(1/2):15–18, March **1953. DWB**—The various methods of reducing atmospheric pressure to sea level differ in their assumptions concerning the mean temperature of the fictitious air layer below the station. Brief descriptions are given of the

various methods involving the use of: 1) accepted temperature gradients, 2) mean of mean monthly temperature and measured temperature, 3) mean of measured temperature and that of the temperature 12 hours before the measured temperature and 4) data on the temperature distribution in the free atmosphere. *Subject Headings:* **1. Barometer reduction 2. Temperature.**—*I.L.D.*

WIND

See also: **Wind components** (Cabrita), 5.2–25; **Wind vector plotting machine** (Canada Met. Div.), 5.2–26; **Fine structure of air movements in atmos.** (Warner, Bowen), 5.2–102; **Mechanism of heavy monsoon rainfall** (Kitazawa), 5.2–217; **Fog density variations and wind velocity** (Kinoshita), 5.2–202.

5.2–161 551.553.1(548) 551.553.22(548)

Agarwala, K. S. (*Central Tractor Organisation, New Delhi*), **The diurnal and seasonal variations of the surface wind at Visakhapatnam.** *Indian Journal of Meteorology and Geophysics*, 4(1):76–81, Jan. **1953.** fig., 4 tables, 2 refs. **MH-BH**—This paper discusses the diurnal and seasonal variations of the wind at Visakhapatnam at a height of 56½ ft above ground based on three years' data 1939–41. Curves showing the mean diurnal variation of the wind speed for the twelve months of the year are given and discussed, these curves show a strong maximum in the early afternoon. A rough estimate of the value of the coefficient of eddy diffusion works out to be 137 in C.G.S. units. Tables of frequencies of prevailing wind direction at 3-hourly intervals for each month of the year are given and their main features are described; a table showing the diurnal variation of "calms" is also included. The general characteristics of land and sea breezes occurring at the station are briefly mentioned. The annual variation of the speed and direction of wind as well as its steadiness is also briefly discussed. The mean monthly steadiness is found to vary from 60 to 92 per cent. *Subject Headings:* **1. Diurnal wind variations 2. Seasonal wind variations 3. Turbulence in the frictional layer 4. Visakhapatnam, India.**—*Author's abstract.*

5.2–162 551.553.12

Gleeson, Thomas A., **Effects of various factors on valley winds.** Florida. State University. Dept. of Meteorology, Contract Nonr-158(00), Project Nr-082-071, Technical Report, Aug. 15, **1952.** 33 p. **DWB.** Also in: *Journal of Meteorology*, 10(4):262–269, Aug. **1953.** 11 figs., 12 refs., 10 eqs. **MH-BH**—Equations of motion are derived for horizontal components of up- and down-valley winds in terms of vertical and horizontal diurnal temperature variation, slope of floor, turbulent heat conduction and friction, Coriolis force and effect of valley sides. A complex solution is found and applied to a hypothetical valley in 50°N. Computed time and height cross sections and hodographs check with an observed valley wind near Innsbruck, Austria, when Coriolis force is included. *Subject Headings:* **1. Mountain and valley wind theory. I. Florida. State University. Dept. of Meteorology II. Contract Nonr-158(00), Project Nr-082-071.**—*C.E.P.B.*

5.2–163 551.553.21(4)

Richter, J., **Über Monsunwinde an der deutschen Nordseeküste.** [On monsoon winds on the German North Sea coast.] *Wetterlotse*, No. 58:139–144, June **1953.** 2 figs., 2 tables. **DWB**—Resultant direction and velocity in each month, and vector differences from year, at two lightships one in open sea and the other near coast, 1951/2, show a change from SW in winter to NW in summer, especially near coast, due to difference in temperature land-sea. *Subject Headings:* **1. Monsoon circulation 2. European monsoon.**—*C.E.P.B.*

5.2–164 551.554:633.1

Inoue, Ei-ichi and Tani, N., **Some measurements of wind over the cultivated field.** *Journal of Agricultural Meteorology*, Tokyo, 7(2):48–50, June **1952.** 2 figs., 7 refs., 2 eqs. English summary p. 50. **DWB**—Vertical distributions of wind velocity over a rice field with an average height of about 80 cm were observed at six points between 84 and 604 cm. For light winds the vertical velocity distribution corresponded fairly well to the logarithmic law;

the roughness parameter Z_0 was about 18 cm. From ten series of observations, Z_0 was calculated to approximate one-fourth the foliage height of rice. *Subject Headings:* **1. Vertical wind velocity distribution 2. Rice fields.**—*From authors' abstract.*

5.2–165 551.554:551.577.1

Mertsalov, A. N., **Raspredelenie vetra s vysotoĭ v sloe treniia i formirovanie osadkov.** [Distribution of wind with height in the frictional layer and formation of precipitation.] *Leningrad. Tsentral'nyĭ Institut Prognozov, Trudy*, 15(42):63–73, **1949.** fig., 6 tables, 12 eqs. **DLC**—Study based on eleven cyclones. A considerable part of precipitation is originated in the frictional layer of the atmosphere. This part can be calculated knowing the surface wind distribution and the height of the condensation level. The wind convergence in different levels is found using AUSTIN's empirical model of wind distribution with height, which gives better results than EKMAN's theoretical model. Methods for the calculation of precipitation from the free atmosphere are also discussed. *Subject Headings:* **1. Precipitation forecasting 2. Wind profiles 3. Convergence.**—*A.A.*

SPECIAL WINDS

5.2–166 551.555(235)(243)

*Koteswaram, P. and Parthasarathy, S., **Winds over Mt. Everest.** *Indian Journal of Meteorology and Geophysics*, 4(2):187–189, April **1953.** fig., 2 refs. **MH-BH**—Using aerological data available for the Himalaya region, the author briefly sums up the principal features of the wind regime over Mount Everest. Seasonal characteristics and day-to-day variations are discussed. The position of the jet stream is indicated. Isotachs are drawn for estimated velocities at 20, 25 and 30 thousand feet for the periods March–May and Sept.–Nov. 1952. *Subject Headings:* **1. Wind regime 2. Upper air wind data 3. Himalayas.**—*G.T.*

5.2–167 551.555:001

†Schmuck, Adam, **Materiał do terminologii wiatrow.** [Contribution to nomenclature of winds.] *Przegląd Meteorologiczny i Hydrologiczny*, No. 1/2:131–157, **1952.** 34 refs. **MH-BH**—The author reviews briefly the wind classification of J. Q. STEWART ("Coasts, waves and weather," New York–London, 1945) and also an unpublished classification of local winds by W. GEORGII which divided the local winds into two groups, strictly local winds and winds of general circulation modified by local orography. However, this study is principally a description of local winds, their physical conditions and geographical distribution throughout the world. The author lists names of winds alphabetically and describes the meaning and the origin of the names of numerous winds. *Subject Headings:* **1. Wind classification 2. Local winds 3. Glossary of local winds.**—*N.T.Z.*

5.2–168 551.555

§Williams, Philip, Jr. (*U. S. W. B., Salt Lake City*), **Wasatch winds of northwest Utah.** *Weatherwise*, 5(6):130–132, Dec. **1952.** 3 figs. **MH-BH**—After discussing general characteristics of Wasatch winds and synoptic situations usually connected with them, the author gives a brief account of the winds of May 16, 1952. A definite relation is found between the 850-mb height difference Fort Bridger, Wyoming (7,100 ft)—Salt Lake City (4200 ft) and maximum easterly wind speed at Salt Lake City. Data on this relationship are presented and commented on. *Subject Headings:* **1. Wasatch winds 2. Utah.**—*G.T.*

5.2–169 551.555.1:551.513

Hela, Ilmo, **Pasaatituulten ja päiävantasaahan tyvenen vyöhykkeen alueiden rajojen sijainti.** [The mean location of the borders between the doldrums and the trade winds.] *Terra*, Helsinki, 64(3):89–91, **1952.** fig. English summary p. 91. **DLC**—The regional distribution of the annual relative variability of the west-east component of the mean wind stress has been computed. On the basis of the distribution, the mean location of the borders between the westerly winds, the NE trade winds, the doldrums and the SE trade winds can be seen. *Subject Headings:* **1. Atmospheric circulation 2. Doldrums 3. Trade winds.**—*Author's abstract.*

5.2–170 551.555.3

Bouët, Max (*Montreux*), **Betrachtungen zum Föhm.** [Considerations on the föhn.] *Leben und Umwelt*, Basel, No. 11:259–262, Aug. **1952.** 3 refs. **DLC**—A popular review of theories dealing with the atmospheric mechanism that causes föhn air to flow down into valleys instead of maintaining the height it reaches over Alpine ridges, as might be expected. The author gives brief summaries of explanations offered by various investigators, and of objections which can be held against them. He concludes that further observational data must be accumulated before an entirely satisfactory föhn theory can be developed. *Subject Heading:* **1. Föhn theory.**—*G.T.*

5.2–171 551.555.3:551.556.3

†Ficker, Heinrich von and de Rudder, Bernhard, **Föhn und Föhnwirkungen. Der gegenwärtige Stand der Frage.** [Föhn and föhn effects. The present status of the problem.] 2nd enl. ed. Leipzig, Akademische Verlagsgesellschaft, **1948.** 114 p. graphs, charts, tables, 99 refs. *Probleme der Bioklimatologie*, v. 1, 1948. **DWB**—This very valuable monograph gives a complete account of the physical causes underlying the föhn wind phenomenon, of its effect on such natural phenomena as fires, floods, avalanche occurrence, drought, etc. in the Alpine regions and the medical effects of föhn. The contents are: 1) meteorology of föhn which includes föhn winds and katabatic winds, older föhn theories and the thermodynamic theory of katabatic winds; the geographical distribution of föhn winds; origin, formation and course of the South föhn in the Northern Alps and its accompanying phenomena, and the North föhn; 2) föhn effects in nature and 3) medical föhn problems which include symptomatology of föhn effects, pathogenesis of biological föhn effects and etiology of the biological föhn effect. A critical review of the various theories accounting for the biological effect of föhn winds and therapy of föhn disease is presented. *Subject Headings:* **1. Föhn winds 2. Katabatic winds 3. Medical climatology 4. Föhn effects 5. Alps.**—*I.L.D.*

WIND EFFECTS

See also: **Föhn, föhn effects** (Ficker, de Rudder), 5.2–171; **Climate of drought regions, influence of shelter belts** (Chubukov), 5.2–268.

5.2–172 551.556:551.584.3:634.8

Bauer, W., **Der Windfaktor im Obstbau.** [The wind factor in viticulture.] *Germany. Deutscher Wetterdienst in der US-Zone, Berichte*, No. 42:352–358, **1952.** 3 figs., 8 tables. **DWB**—The high-level parts of the Erbach district show "wind streets" due to orography and 3 of these are investigated. In sheltered areas wind speed is less than half that of the most exposed places; other zones are intermediate. Isolines of wind speeds as percentages are shown. *Subject Headings:* **1. Wind effects 2. Viticulture.**—*C.E.P.B.*

5.2–173 551.556:69

Dick, J. B. and Thomas, D. A., **Ventilation research in occupied houses.** *Institution of Heating and Ventilating Engineers, Journal*, 19:306–326, **1951.** 10 figs., table, 7 refs., 11 eqs. **GB-MO**—At an exposed and a sheltered site in S.E. England, the rates of air changes in small occupied houses were measured and correlated with the wind velocity and numbers of windows and ventilators open. The "window-opening habit" was related to the external temperature and wind velocity. The average air change rate was 2–3 per hour. *Subject Headings:* **1. Heating and ventilating 2. Wind effects.**—*C.E.P.B.*

5.2–174 551.556(489)

Hellström, B. (*R. Inst. of Techn., Stockholm*), **Wind effect on Ringköbing Fjord.** *American Geophysical Union, Transactions*, 34(2):194–198, April **1953.** 7 figs., table, 3 refs. **MH-BH**—Selected data on water level variations which were registered at six locations in Ringköbing Fjord, Denmark, are presented in conjunction with corresponding values of storm direction and velocity. The study is offered as a confirmation of the author's differential equation for the gradient of the water surface during storms, which had been substantiated earlier by data obtained on lakes in the U. S., Sweden and elsewhere. The formula accounts for depth of

water, tangential wind stress on water surface, and volume weight of water. *Subject Headings:* **1. Wind effects 2. Storm tides 3. Ringköbing Fjord, Denmark.**—*G.T.*

5.2–175 551.556:624.21

Recommended Golden Gate Bridge bracing. *Engineering News-Record*, 150(4):22, Jan. 22, **1953. DLC**—A note announcing a recommendation submitted by a board of engineers. The proposed construction would involve an addition to the bridge's bottom lateral system. By this work, the cost of which is estimated at $3.5 million, "critical wind velocity that could induce torsional vibration in the deck structure would be raised from about 50 mph to nearly 80 mph." A few structural details of the bridge are given. *Subject Headings:* **1. Bridge construction 2. Wind resistance of bridges.**—*G.T.*

5.2–176 551.556.1:631.6:551.578.46

Kuhn, Wolfgang, **Auswinterungsschäden in der Heckenlandschaft. Ein Beitrag zum Problem sinnvoller Landschaftspflege.** [Winter damage in the hedge country. A contribution to the problem of land management.] *Umschau*, 53(7):210–211, April 1, **1953.** 7 figs. **DLC**—In the oceanic climate of Germany, planting loose hedges as windbreaks may cause damage because snow accumulates to leeward of them—examples quoted. These snow banks melt 2–3 weeks later than in open; absence of light and oxygen combined with abundant water favor fungi. *Subject Headings:* **1. Snow retention 2. Windbreaks.**—*C.E.P.B.*

5.2–177 551.556.1:634.94

Smith, L. P., **Wind damage to trees.** *Meteorological Magazine*, London, 82(976):315, Oct. **1953.** 2 photos. **MH-BH**—Two photos of trees in a narrow valley in Wales showing "blasting" due to vicious downdrafts in the lee of the steep valley head. *Subject Heading:* **1. Wind damage to forests.**—*C.E.P.B.*

UPPER AIR WINDS

5.2–178 551.557.2

*Austin, E. E. and Dewar, D., **Upper winds over the Mediterranean and Middle East.** *Great Britain. Meteorological Research Committee, M.R.P.* 811, May 18, **1953.** 10 p. 3 figs., 8 tables. Mimeo. **DWB**—Monthly vector resultant winds, standard vector deviations and scalar mean velocities 1948–50 for 8 British stations between Gibraltar, Habbaniya and Nairobi, 850–100 mb are shown in tables and plotted. A number of points are brought out, including a subtropical jet in winter. *Subject Headings:* **1. Upper air wind charts 2. Mediterranean Area 3. Middle East.**—*C.E.P.B.*

5.2–179 551.557.2

*Gilchrist, A., **Upper winds in the tropics and subtropics.** *Great Britain. Meteorological Research Committee, M.R.P.* 795, April 10, **1953.** 15 p. 27 figs., tables, 22 refs. Mimeo. **DWB**—With a view to revision of "Upper winds over the world" (*see item* 10–117, Oct. 1950, *MAB*), charts showing mean winds (40°N–40°S) for Jan., April, July, Oct. at 300, 200, 150 and 100 mb are given, based on rawind observations and geostrophic winds mostly for 1951. Cross sections of mean zonal winds and potential temperature are given for 80°W, 45°, 140° and 165°E. All charts show a subtropical westerly jet, about 30°N in winter, further north in summer; structure is shown for individual days. Nearer equator is a system of easterlies. *Subject Headings:* **1. Upper air wind charts 2. Tropical meteorology.**—*C.E.P.B.*

5.2–180 551.557.3(567)

Bannon, J. K., **Note on the structure of the high altitude strong wind belt in the Middle East in winter.** *Great Britain. Meteorological Research Committee, M.R.P.* 821, June 10, **1953.** 4 p. 3 figs., 4 refs. Mimeo. **DWB**—Upper winds and temperatures at Habbaniya and Bahrein 400–60 mb were plotted twice daily for Jan. 1951 (example shown Jan. 12–14) and a mean cross section drawn for 45°E. Position of belt of strongest winds (between lower and upper tropopauses) was estimated. The 100 kt isokinetic is about 700 mi wide; level of maximum wind falls southwards. *Subject Headings:* **1. Upper air wind variations 2. Iraq.**—*C.E.P.B.*

5.2–181 551.557.3

*Fotheringham, R. R., **High altitudes winds at O.W.S. "Polar Front."** *Great Britain. Meteorological Research Committee, M.R.P.* 812, May 20, **1953.** 2 p. 12 figs., table. Mimeo. **DWB**—Upper wind velocities in 66°N, 2°E, June 1948–April 1952, are plotted to show seasonal frequencies in 19,600–64,000 ft above various speeds (80–160 km). There is a marked maximum in 25,000–30,000 ft and a decrease in summer compared with other seasons. Directions are mainly westerly. Results are compared with Larkhill and Lerwick. *Subject Headings:* **1. Upper air wind frequencies 2. North Atlantic.**—*C.E.P.B.*

5.2–182 551.557.3:551.508.822

Rapp, R. Robert, **Variability of upper winds.** New York University. College of Engineering. Research Division, Contract DA 36-039 sc-72, Progress Report 138-06, Dec. 15, **1951.** 13 p. 8 tables, fig. **DWB**—A series of flights were made on Oct. 17, 1951, to determine variability of wind speeds at levels from 1 to 10 km. These variabilities are comparable to those of a similar set of soundings on Oct. 10, 1951, indicating the reliability of the method. An analysis was also made of the temperatures and of the heights of the 850, 700, 500, 400 and 300 mb surfaces on Oct. 17, 1951 and this was compared with a similar analysis for Oct. 10, 1951. The standard error ranges from 0.5°C at 850 mb to 1°C at 300 mb for this type of instrument (type, and place of soundings not stated in this report). *Subject Headings:* **1. Upper air wind variability 2. Radiosonde errors. I. New York University. College of Engineering. Research Division II. Contract DA 36-039 sc-72.**—*M.R.*

VERTICAL MOTION

5.2–183 551.558

Brun, Paul; Leslie, Lloyd and Sobiski, L. J., **The vertical component of atmospheric motion as revealed by radiosonde records.** *Canada. Meteorological Division, Circular,* 2326, Tec. 156, July 10, **1953.** 15 p. 2 figs., table. **DWB**—In Pt. I of this circular, the factors affecting the rate of ascent of a radiosonde in the absence of vertical currents and icing are considered, and it is concluded that under such conditions the ascent rate is not subject to sudden variations. In Pt. II, a method of calculating actual ascent rates from radiosonde records is described and applied to ascents made at Whitehorse, Y. T. Large short-period variations in the calculated ascent rates are found and are attributed to vertical air currents. In the Addendum, a discussion of the reliability of the method is given and suggestions are made for further work along these lines. *Subject Headings:* **1. Vertical motion 2. Balloon ascension rates 3. Whitehorse, Y. T., Canada.**—*Authors' abstract.*

5.2–184 551.558:551.577.37

*Hutchings, J. W. and Farkas, Edith, **Some estimates of vertical motion from observed precipitation intensities.** *New Zealand. Meteorological Office, Technical Note,* No. 99, July 8, **1953.** 2 p. table. **DWB**—Vertical velocities occurring in the troposphere are calculated for several cases in the New Zealand area using the observed rates of precipitation at the ground and upper air temperature data obtained by radiosondes. The results are in good agreement with the order of magnitude of vertical velocities observed in similar situations in other parts of the world. *Subject Headings:* **1. Vertical velocities 2. Rain intensities 3. Upper air temperature data.**—*Authors' abstract.*

5.2–185 551.558:551.501.7

Orlova, E. M., **Metod rascheta vertikal'nykh skorosteĭ na razlichnykh urovniiakh po kartam baricheskoĭ topografii.** [Calculation of vertical velocities at different levels by means of baric topographic charts.] *Leningrad. Tsentral'nyĭ Institut Prognozov, Trudy,* 15(42):74–89, **1949.** 13 figs., table, 4 refs. **DLC**—Author gives a working formula for the computation of vertical velocities on the basis of the divergence of wind deviations from the geostrophic wind. As long as no reliable data for the wind deviation are available, the latter can be computed from the change of pressure according to KIBEL'. A nomogram is presented for the computation of the wind deviation and an actual synoptic situation is discussed in detail, showing the areas of possible precipitation. *Subject Headings:* **1. Vertical velocities 2. Wind deviation 3. Precipitation forecasting 4. Nomograms.**—*A.A.*

5.2–186 551.558.29:551 510.534

Reed, Richard J , **Large-scale eddy flux as a mechanism for vertical transport of ozone.** *Journal of Meteorology*, 10(4):296–297, Aug. **1953.** 7 refs., 8 eqs. **MH-BH**—The instantaneous large-scale vertical eddy flux of ozone near 10 km in mid-latitudes in winter is computed as about 10^{-11} gm/cm²/sec, nearly equal to vertical transfer by mean meridional motion. This is consistent with observed maximum ozone in winter in 50–60°N. *Subject Headings:* **1. Ozone distribution 2. Vertical eddy flux.**—*C.E.P.B.*

AQUEOUS VAPOR AND HYDROMETEORS

EVAPORATION

See also: **Evaporation in nature** (Penman), 5.2–6; **Thermodynamic basis of Magnus' formula** (Dinkelacker), 5.2–30; **Laminar free convection . . .** (Yih), 5.2–103; **Ice fog phenomena, Alaska** (Robinson), 5.2–200; **Diffusion of water and water vapor through skin** (Buettner), 5.2–273.

5.2–187 551.573:551.578.46(494)

de Quervain, M. and Zingg, Th. (*Davos, Switzerland*), **Ueber die Verdunstung der alpinen Schneedecke.** [Evaporation of alpine snow cover.] *I.U.G.G. International Association of Scientific Hydrology, Brussels, 1951, Transactions*, v. 1:154–160, **1952.** 4 figs., 3 tables, 7 refs. **DWB**—Evaporation of snow is assumed to be proportional to the saturation deficit between the water vapor pressure of the air and saturation pressure over ice at the temperature of the snow, as well as proportional to the absolute temperature and the square roots of pressure and wind speed. The agreement with actual measurements was very close for both evaporation and condensation. Samples of measurement data are given, as well as monthly totals for snow evaporation in shade and in the sun. *Subject Headings:* **1. Evaporation of snow 2. Condensation 3. Switzerland.**—*A.A.*

5.2–188 551.573:551.579(481)

Høiland, Einar; Palm, E. and Riis, E., **A calculation of the evaporation at different places in South-Norway.** *Geofisiske Publikasjoner*, Oslo, 18(2), **1952.** 11 p. 6 figs., 5 tables. **DLC**—One of the first attempts to compute the annual water budget of some places in Norway, based on precipitation (P) and runoff (R) records from 5 catchment areas (200–700 km²) for 19–22 single hydrologic years. P was computed as the average of 3–5 stations, not reduced to the mean height of the area. The authors adopt the relation $R=aP-b$ for each area, assume that b is the "evaporation" and obtain values from 150 to 390 mm. The mean apparent water losses computed as the difference between mean P and R, according to given data, vary between +260 and −350 mm. The coefficient a, computed by the authors on the basis of a geometric mean between two regression lines, was found to lie between 1.09 and 1.56. *Subject Headings:* **1. Hydrologic cycle 2. Evapotranspiration 3. Norway.**—*A.A.*

5.2–189 551.573

Stone, E. L., Jr. (*Dept. of Agronomy, Cornell Univ.*), **Evaporation in nature.** *Journal of Forestry*, 50(10):746–747, Oct. **1952.** 12 refs. **DLC**—The author thinks that PENMAN and SCHOFIELD, and their work at Rothamsted Experiment Station in England, have at last provided a sound approach to the solution of problems of evapotranspiration. Reviewing the 1948, 1949 and 1951 published works of these authors on evaporation, the stress is laid on radiation as the prime factor in providing energy for evaporation, and although all variations in evapotranspiration cannot be explained on the basis of radiation, it is more important than air temperature, wind movement, humidity, or type of vegetation, canopy, etc. Single trees or plants cannot be used as indicators of areal evaporation. *Subject Headings:* **1. Evaporation 2. Evapotranspiration 3. Radiation effects. I. Penman, H. L. II. Schofield, R. H.**—*M.R.*

5.2–190 551.573:551.579.5:63 551.58:63

Turpin, H. W., **Research and education in agriculture.** *Farming in South Africa*, 27(321): 483–600, Dec. **1952. DA**—On page 583 (under the heading climatology and hydrology) studies conducted with corn at the Rietvlei Agricultural Research Station are reported. The

experiments are aimed at determining reactions of the plants to various soil moisture conditions. The experimental site is equipped with a full range of meteorological instruments including the equipment developed by THORNTHWAITE for potential evapotranspiration measurement. Other sections of the report contain only very brief indications of agro-climatological studies, such as those investigating the influence of temperature on certain pasture grasses, or those made in connection with the choice of cattle for adaptability to tropical environment. *Subject Headings:* **1. Agricultural climatology 2. Evapotranspiration 3. Soil moisture.**—*G.T.*

5.2–191 551.573:551.577:625:631.4

The wet earth. *Johns Hopkins Magazine*, Baltimore, 4(8):13–15, 29, May **1953.** photos. **DLC**—A popular review of the work being done by C. W. THORNTHWAITE, JOHN R. MATHER and D. B. KRIMGOLD at Seabrook, N. J., to determine the relation between rainfall, evapotranspiration and soil moisture (trafficability) for farming or military operations involving heavy equipment. The work consists of 3 phases: 1) climatological relations (as distinct from those involving day-to-day weather conditions), 2) instrumentation (developing and testing evapotranspirometers to determine disposal of excess water) and 3) long range predictions of state of ground anywhere on earth. *Subject Headings:* **1. Soil trafficability studies 2. Potential evapotranspiration 3. Evapotranspirometers 4. Seabrook, N. J. I. Thornthwaite, C. W. II. Mather, John R. III. Krimgold, Dov B.**—*M.R.*

CONDENSATION

See also: **Cloud physics research progress** (Mason), 5.2–5; **Annual dew summary** (Israel Met. Serv.), 5.2–36; **Study of formation of dew in connection with hygrometer accuracy** (Bisio), 5.2–51; **Radiophysics, Australia** (Higgs), 5.2–94.

5.2–192 551.574.1:551.515.42:551.577

*Reynolds, S. E. (*N. Mexico Inst. of Mining & Technology, Socorro, N. M.*), **Thunderstorm-precipitation growth and electrical-charge generation.** *American Meteorological Society, Bulletin*, 34(3):117–123, March **1953.** 5 figs., table, 19 refs. **DWB**—Data obtained by Workman and the author in New Mexico indicate that precipitation can be initiated in thunderstorms in the area, and also in the Ohio Valley (BYERS' data) without involving the ice-crystal stage, and that this process can be explained by LANGMUIR's cloud-droplet growth theory. Charts show: 1) vertical speeds prior to lightning; 2) particle size vs. temperature and liquid water content required for growth by glaze accretion, 3) and 4) time and temperature vs. liquid water content required to produce wet hailstones at a given updraft velocity, respectively, etc. It is concluded that vertical motion of radar echo does not represent the speed at which cloud or precipitation elements move upward, but the speed that the conditions favorable for glaze ice production move upward. *Subject Headings:* **1. Cloud physics 2. Thunderstorm rainfall 3. Vertical velocities in clouds.**—*M.R.*

5.2–193 551.574.41

Leopold, Luna B., **Dew as a source of plant moisture.** *Pacific Science*, Honolulu, 6(3): 259–261, July **1952.** fig., table, 2 refs. Abstracted from reprint. **DWB**—Dew seems to be an important source of moisture for pineapples and other shallow rooted plants. Data for monthly frequencies of light, moderate and heavy dew at Honolulu are given, based on two years of observations. The maximum occurs in Jan. (66% of rainless days), the minimum in July (13%). The annual total is 198 days (40% of rainless days). The estimated annual amount is 0.8″. *Subject Headings:* **1. Dew frequency 2. Honolulu, Hawaii.**—*A.A.*

5.2–194 551.574.42:551.508

Konček, Mikuláš, **Zúzmaramérések a Lomnici csúcson és egy új müszer a zúzmaralerakódások önmüködö regisztrálására.** [Rime measurements on Lomnic Peak, and a new instrument for automatic recording of rime deposits.] *Időjárás*, 56(11/12):333–337, Nov./Dec. **1952.** 2 figs., photos (inserted between p. 370 and 371). Russian and French summaries

p. 391. **DLC**—In this lecture, delivered at the International Meteorological and Hydrological Conference held in Hungary on Nov. 26–29, 1952, the author sums up the results of rime measurement on Lomnic Peak, Tatra Mountains (various heights up to 2630 m). He then describes an instrument he developed for continuous recording of the rate of rime accretion The apparatus utilizes a vertical cylindrical rod connected with a recording unit which reacts to the weight of rime deposited on the rod. Photographs and a diagram of the instrument and a sample record are presented. *Subject Headings:* **1. Rime measurement techniques 2. Rime recorders 3. Lomnic Peak, Tatra Mountains, Czechoslovskia.**—*G.T.*

5.2–195 551.574.7:629.13

Callaghan, Edmund E. and Serafini, John S. (*Cleveland, Ohio*), **A method for rapid determination of the icing limit of a body in terms of the stream conditions.** *U. S. NACA, Technical Notes* 2914, March **1953.** 33 p. 5 figs., 6 eqs. **DLC**—The effects of existing frictional heating were analyzed to determine the conditions under which ice formation on aircraft surfaces can be prevented. A method is presented for rapidly determining by means of charts the combination of Mach number, altitude and stream temperature which will maintain an ice-free surface in an icing cloud. The method can be applied to both subsonic and supersonic flow. The charts presented are for Mach numbers up to 1.8 and pressure altitudes from sea level to 45,000 ft. *Subject Headings:* **1. Icing of aircraft 2. Icing prevention. I. NACA TN 2914.**—*Authors' abstract.*

5.2–196 551.574.7

Diem, M. (*Karlsruhe*), **Einsatz an Hochspannungsleitungen im Gebirge.** [Experiment with high-tension lines in mountains.] *Wetter und Leben*, 5(1/2):19–20, **1953. MH-BH**—ALBRECHT's theoretical calculations of the deposition rate of hoar frost upon an object in the atmosphere were tested experimentally and a close agreement was found between theoretical and experimental values. *Subject Heading:* **1. Hoar frost on wires.**—*I.L.D.*

5.2–197 551.574.7:629.135

Mason, Derek, **Aircraft and icing research—I. II.** *Weather*, 8(8,9):243–246; 259–267, Aug., Sept. **1953.** 5 figs., 4 plates. **MH-BH**—Pt. I. discusses icing on Viking airliners, theories of de-icing and flight trials in icing conditions to determine minimum flow of anti-icing fluid required. In Pt. II the 1950 trials are described and analyzed, including frequency curves of water content and droplet size and relation between water content and droplet size or ambient temperature. Forecasting icing under various conditions is discussed. *Subject Headings:* **1. Icing research 2. Icing of aircraft 3. Aeronautical meteorology.**—*C.E.P.B.*

FOG

5.2–198 551.575.1:551.524.37

Hay, R. F. M., **Frost smoke and unusually low air temperature at Ocean Weather Station India.** *Marine Observer*, 23(162)2:18–225, Oct. **1953.** 6 figs., 2 tables, 5 refs. **DWB**—Dec. 14, 1952, "Arctic frost smoke" reported in 60°37′N, 14°W. Air temperature 27°, sea 48°, air trajectory nearly direct from Spitsbergen. Three-hourly observations of sea and air temperature, wind and cloud shown in graph Dec. 8–18, and rate of evaporation calculated, showing increase on 14th. Time isopleths of temperature, dew point and dry bulb-dew point shown up to 500 mb level. It is concluded that frost smoke was due to large vapor pressure gradient, excessive evaporation, large air-sea temperature difference and vigorous convection. *Subject Headings:* **1. Frost smoke 2. North Atlantic.**—*C.E.P.B.*

5.2–199 551.575.1

Oura, Hirobumi and Hori, Jun-ichi, **Optical method of measuring drop-size distribution of fog.** (In: Sapporo, Japan. Hokkaido University. Institute of Low Temperature Science, **Studies on fogs in relation to fog-preventing forest. 1953.** p. 327–333. 3 figs., table, 3 refs., eqs.) **MH-BH**—"Frankfurter diffraction patterns were produced by sending red light across a stream of fog in natural state." By measuring the intensity distribution, the dif-

fraction pattern was measured by comparing the blackness of each portion with that of the intensity scale. The intensity distribution $I(\theta)$ is given by the equation:

$$I\theta = \int_0^\alpha \left(\frac{a^2\pi}{\lambda}\right) \left\{ \frac{2J\left(\frac{2\pi}{\lambda} a\theta\right)}{\frac{2\pi}{\lambda}=\theta} \right\} \varphi(a)da;$$

$\varphi(a)$, number of fog particles of radius a is obtained by solving this integral equation. *Subject Heading:* **1. Fog drop size measurement.**—*I.L.D.*

5.2–200 551.575.1:551.571

Robinson, Elmer, **Investigation of the ice fog phenomena in the Alaskan area.** Stanford Research Institute, Contract AF 19(122)-473, SRI Project 473, Progress Report No. 6, Nov. 1, 1952–Jan. 31, 1953, April 3, 1953. 26 p. 9 figs., 5 tables, 12 refs. **DWB**—In order to take steps to improve ceiling and visibility conditions during periods of ice fog in the Arctic, a series of studies was undertaken at Eilson Field near Fairbanks, Alaska, to determine the physical, chemical and meteorological conditions associated with the formation (and dissipation) of this phenomenon. During the winter period from Nov. 23, 1952 to Jan. 31, 1953, two extensive periods of ice fog occurred. Dec. 1952 was one of the warmest and driest on record at Fairbanks. Chemical means were used to extract the water vapor from the air so as to determine the humidity accurately. Details of scrubbing and titration processes are given in sketches and text, and methods of checking accuracy elaborated. Samples were taken at various heights in and above the fog layer by means of tubing on the thermistor cage of the wiresonde apparatus carried aloft by 3 captive balloons. Temperature near the ground and the frost point temperature were recorded at a field station with a modified Brown recorder. *Subject Headings:* **1. Ice fog 2. Humidity measurement 3. Alaska. I. Stanford Research Institute II. Contract AF 19(122)-473.**—*M.R.*

5.2–201 551.575.1

Vol'fkovich, S. I., **Obrazovanie i predotvrashchenie tumanov.** [Formation and prevention of fog.] *Nauka i Zhizn'*, Moscow, No. 1:20–21, 1952. 2 illus. **DLC**—A popular science article describing and illustrating the nature of fogs (natural and artificial), and the usefulness in agriculture and industry as well as aviation, etc., of research into the nature, formation and dissipation of fogs of all types. The work of A. G. Amelin (*see item* 3.10–1, Oct. 1952, *MAB*), who received the Stalin Prize, is given great emphasis. *Subject Headings:* **1. Fog formation 2. Fog prevention 3. Artificial fog. I. Amelin, A. G.**—*M.R.*

5.2–202 551.575.3:551.551

Kinoshita, Seitti, **On the variations of fog density and wind velocity.** (In: Sapporo, Japan. Hokkaido University. Institute of Low Temperature Science, **Studies on fogs in relation to fog-preventing forest. 1953.** p. 335–342. 6 figs., 2 refs.) **MH-BH**—The temporal variations of fog density, determined by measuring the transmission of a light beam, emitted from an artificial light through fog, and the wind velocity, were measured by the hot wire anemometer. The correlation coefficient between fog density and wind velocity increases with increase in wind turbulence. *Subject Headings:* **1. Advection sea fog 2. Fog density 3. Wind velocity 4. Atmospheric turbulence.**—*I.L.D.*

CLOUDS

See also: **Cloud physics research progress** (Mason), 5.2–5; **Tornado formation** (Hawke), 5.2–115; **Visibility in clouds** (Huss), 5.2–289.

5.2–203 551.576.1

Ashbel, Dov, **Atlas 'ananim.** Jerusalem, Central Press [1939]. 63 p. photos. Cover-title: Cloud atlas. In Hebrew; index and some legends in Hebrew and English. 2 refs. in English and German. **DLC**—A pocket size atlas with the 33 different cloud types divided

into 2 major groups: (1) Winter clouds, (2) Summer clouds; and these groups subdivided into high, medium, low and convective clouds. Most of the photographs are original (made in the Palestine, Lebanon or Dead Sea region), and some are of rare and interesting formations. *Subject Headings:* **1. Cloud atlases 2. Hebrew language.**—*M.R.*

5.2–204 551.576.11:551.508.765

Eldridge, Ralph G., **Some cloud observations with the infrared spectrograph.** Massachusetts Institute of Technology. Dept. of Meteorology, Contract AF 19(122)-245, Measurement of Drop Size Distribution and Liquid Water Content in Natural Clouds, Scientific Report No. 3, Dec. 1, 1952. 7 p. 7 figs., 2 tables. **DWB**—Measurements of drop size distribution are presented for sprays from commercial fog nozzles and for mountain fog, as observed by the M.I.T. infrared cloud spectrograph. *Subject Headings:* **1. Drop size distribution measurement 2. Cloud physics 3. Infrared spectrographs. I. Massachusetts Institute of Technology. Dept. of Meteorology II. Contract AF 19(122)-245.**—*Author's abstract.*

5.2–205 551.576.11

Findeisen, W. (*Friedrichshafen*), **The formation of the 0°-isothermal layer and fractocumulus under nimbostratus.** [n.d.] 8 p. 5 figs., 2 refs., eqs. **DWB.** Transl. of his: **Die Entstehung der 0°-Isothermie und Fraktocumulus-Bildung unter Nimbostratus.** *Meteorologische Zeitschrift*, 57(2):4–54, Feb. **1940. DWB**—The formation of an isothermal layer at the freezing point, often observed during aerological ascents, is explained by the melting of falling ice particles. The duration of precipitation necessary to form an isothermal layer of certain thickness is computed (1 min for 24 m, 4 hrs for 370 m) as well as for the formation of a Fcu layer. The vertical velocity of air, which prevents the further growth of the isothermal layer, is 24 cm sec^{-1} for a thickness of 20 m and 1.2 cm sec^{-1} for 400 m. *Subject Headings:* **1. Cloud physics 2. Isothermal layer 3. Fractocumulus clouds. I. Glaser, Arnold** (*trans.*).—*A.A.*

PRECIPITATION

See also: **Interpolation of missing precip. records** (Paulhus, Kohler), 5.2–32; **Reduction of short rainfall records** (Schirmer), 5.2–33; **Rainfall bulletin, 1948–50** (Haiti Met. Obs.), 5.2–38; **Cloud seeding evaluation** (Lieberman), 5.2–79; **Distribution of wind with height and precip. formation** (Mertsalov), 5.2–165; **Estimates of vertical motion from precip. intensities** (Hutchings, Farkas), 5.2–184; **The wet earth,** 5.2–191; **Thunderstorm-precip. growth . . .** (Reynolds), 5.2–192; **Hydrological yearbook of Israel,** 5.2–242; **Electricity of precip.** (Best), 5.2–305.

5.2–206 551.577.34(54)

Agarwala, K. S. (*New Delhi*), **Fluctuations of annual rainfall in Central India (1872–1947).** *Indian Journal of Meteorology and Geophysics*, 3(3):229–230, July **1952.** 2 figs., table. **DWB**—Running 10 year means of annual rainfall show a remarkable increase from 1910 to 1947 (35″ to 45″) for Central India. The question whether there is a permanent climatic change is still unsettled. *Subject Headings:* **1. Climatic variations 2. Precipitation trends 3. India.**—*A.A.*

5.2–207 551.577.32(611)

Isnard, Hildebert, **La répartition saisonnière des pluies en Tunisie.** [Seasonal distribution of rainfall in Tunisia.] *Annales de Géographie*, Paris, 61(327):357–362, Sept./Oct. **1952.** 3 figs. **DWB**—The author refers to his paper on the seasonal distribution of rainfall in Algeria (*see item* 3A–290, Jan. 1952, *MAB*) and applies the method developed in that paper to rainfall in Tunisia. Seasonal variation at several stations is graphically presented. A chart of spring-summer rainfall expressed in terms of percentage of total annual rainfall is drawn up. This percentage is lowest near the coast and shows a continuous increase toward the interior. The values obtained are discussed and explained. They are found to supplement those for Algeria, with good agreement in adjoining regions. *Subject Headings:* **1. Seasonal rainfall distribution 2. Tunisia.**—*G.T.*

5.2–208 551.577.32:551.590.21:523.74

Křivský, L. (*State Met. Inst. of Czechoslovakia, Prague*), **Yearly atmospheric precipitation in Europe in relation to the activity of the sun.** *Prague. Ústředni Ústav Astronomický, Bulletin*, 2(11/12):161–196, Dec. 31, **1951.** 4 figs., 6 tables, 6 refs. **DLC**—The author studied the course of annual precipitation during odd and even sunspot cycles and found a number of zones with opposite results even in a part of Europe. *Subject Headings:* **1. Precipitation variations 2. Sunspot effects.**—*A.A.*

5.2–209 551.577.32:551.515.8(52)

Miyake, H., **The rainy season ("Baiu" and "Syurin") and the meridional movement of polar front associated with cold trough.** *Journal of Meteorological Research*, Tokyo, 4(5):186–190, Aug. **1952.** 5 figs., 3 tables. In Japanese; English summary p. (14). **MH-BH**—Latitudinal positions of the upper polar front (at 500 mb) and of the main front on the ground are tabulated by months and decades for 1950 and 1951. Bai-u (May–June) and Syurin (Sept.) phenomena are interpreted in terms of front displacements. *Subject Headings:* **1. Polar fronts 2. Bai-u 3. Syurin 4. Japan.**—*G.T.*

5.2–210 551.577.32(436)

Steinhauser, F. (*Vienna*), **Die Struktur des Jahresganges des Niederschlags in Wien.** [The structure of the annual variation of precipitation in Vienna.] *Austria. Zentralanstalt für Meteorologie und Geodynamik, Jahrbuch*, **1951.** p. D37–D46. 5 tables. **DWB**—Study based on the homogeneous observation period 1874–1950 in Vienna-Hohe Warte. Precipitation data presented for each calendar day are: frequency (>0.1; ≥ 1.0; ≥ 5.0 mm), amount and "density" (amount per day with precipitation). Values smoothed over five days are presented graphically. Results compared with FLOHN's natural subdivision of the climatological year. *Subject Headings:* **1. Singularities 2. Precipitation variations 3. Vienna, Austria. I. Flohn, H.**—*A.A.*

5.2–211 551.577.33(94)

Alldis, V. R., **Australian drought cycles.** *Australian Surveyor*, June–Sept. **1949.** p. 16. 8 figs. Abstracted from reprint. Summary p. 14–16. **GB-MO**—Variations of rainfall in Australia show a rough periodicity of 15 years with minor cycles and great droughts at intervals of 45 years. This is shown also in sheep population. Great snowfalls occur at culmination of droughts. S. Africa and New Zealand agree with Australia but not Argentina or U.S.A. No direct correlation is found with sunspots. *Subject Headings:* **1. Drought 2. Australia.**—*C.E.P.B.*

5.2–212 551.577.33(4)

Péczely, György, **Csapadékhullámok vándorlása Európában.** [Propagation of precipitation waves across Europe.] *Időjárás*, 56(11/12):347–352, Nov./Dec. **1952.** 3 figs., 3 tables, 2 refs. Russian and French summaries p. 392. **DLC**—Correlations between rainfall amounts at 35 stations in Europe (as determined for the period 1856–1905) are established and found to show a pattern of alternating belts with positive and negative values. An analysis of data for 10 stations (1856–1920) shows that these belts (mostly arranged in NW–SE direction) represent the components of all precipitation-producing factors combined into precipitation waves (average wave length: 2200 km) which propagate in SW–NE direction. *Subject Headings:* **1. Rainfall area movements 2. Precipitation distribution 3. Europe.**—*G.T.*

5.2–213 551.577.34(434.7)

*Bach, Heinz, **Die Abweichungen des Niederschlags vom 80 jährigen Mittel 1872–1951 von Ulm.** [The departures of precipitation from the 80-year mean 1872–1951 at Ulm.] *Meteorologische Rundschau*, 5(9/10):172–175, Sept./Oct. **1952.** 2 figs., 2 tables, 3 refs. **DWB**—Monthly means 1891–1930 and 1872–1951 are compared and monthly, seasonal and annual variations 1872–1951 plotted as cumulative departures. Rainfall decreased 1877–1911, then increased to 1946. The variations are related to frequencies of pressure types. *Subject Headings:* **1. Precipitation variations 2. Ulm, Germany.**—*C.E.P.B.*

5.2–214 551.577.34(433)

*Russ, A., **Die Niederschlagsverhältnisse der letzten 70 Jahre in Bamberg und München.** [The precipitation conditions of the past 70 years in Bamberg and Munich.] *Germany. Deutscher Wetterdienst in der US-Zone, Berichte*, No. 42:139–146, **1952.** 7 figs., 6 tables, 5 refs. **DWB**—Variations 1881–1950 of rainfall amount and days, frequencies of dry and rainy periods, and discussion. *Subject Headings:* **1. Precipitation variations 2. Bamberg, Germany 3. Munich, Germany.**—*C.E.P.B.*

5.2–215 551.577.36(71):551.501.45

Cooke, D. S., **The duration of wet and dry spells at Moncton, New Brunswick.** *Royal Meteorological Society, Quarterly Journal*, 79(342):536–538, Oct. **1953.** table, 3 refs. **DWB**—Frequency of dry spells of n days, 1900–1949, are closely fitted by $1332(0.7272)^n$, but frequencies of wet spells by $4391(0.551)^n/n$. *Subject Headings:* **1. Precipitation variations 2. Moncton, New Brunswick.**—*C.E.P.B.*

5.2–216 551.577.36(71)

Longley, R. W., **The length of dry and wet periods.** *Royal Meteorological Society, Quarterly Journal*, 79(342):520–527, Oct. **1953.** 7 figs., 4 tables, 2 refs., 4 eqs. **DWB**—Numbers of dry and wet periods y equalling or exceeding n days at Montreal are given by: dry periods, $y=680(0.650)^n$, wet periods, $y=887(0.552)^n$. These give good representation for wet periods but slightly too few dry periods of 12–20 days. Similar results were found for St. John, N.B., Winnipeg and Victoria, B.C. but at Dawson log $y=a-bn+cn^2$ gave better results for dry periods. Probability of a wet day following a dry day and vice versa is also computed. *Subject Headings:* **1. Precipitation variations 2. Canada.**—*C.E.P.B.*

SNOW

See also: **Wind damage in hedge country** (Kuhn), 5.2–176; **Snow evaporation** (de Quervain, Zing), 5.2–187.

5.2–217 551.578.43:551.553.21

Kitazawa, S. (*Nagano Weather Sta.*), **On the mechanism of heavy monsoon snowfall in the vicinity of Nagano and Shinetsu Border (I).** *Geophysical Magazine*, Tokyo, 23(4):341–347, May **1952.** 5 figs., 3 refs. **MH-BH**—The 40 heavy snowfalls (snowfall depth greater than 75 cm in 24 hours) which occurred during 1924–1947 at Natano are classified into three synoptic types, one of which, termed the monsoon type, occurs in the Nagano Basin on the lee side or southeast side of the Togakushi and Myoko Ranges, and causes the "basin snowfall." The synoptic conditions and mechanism of the monsoon snowfall are described and a model of the basin snowfall is set up. It is based upon the fact that the monsoon type occurs when the monsoon is strong in the upper layer but in the basin the wind is weak and the air is considerably warmer and moister than that of the upper layer. It is assumed on the basis of observations that a pumping action of air occurs in the basin and the ascending current is due to the strong upper wind over the mountain and convective instability is present to a height of 1–3 km above the earth's surface. An expression for determining ascending current velocity is devised and calculated values correspond with observed ones. The descent of the upper layer wind as a compensation for ascending currents and the resulting cessation of snowfall are discussed. The author also shows that snowfall and rainfall produced by a local depression over warm water currents along the Japan Sea coast have a dynamic mechanism similar to that of "basin snowfall." *Subject Headings:* **1. Monsoon snowfall 2. Excessive snowfall 3. Nagano, Japan.**—*I.L.D.*

5.2–218 551.578.43:551.578.46

*Paulhus, J. L. H. (*U. S. W. B., Wash., D. C.*), **Record snowfall of April 14–15, 1921, at Silver Lake, Colorado.** *Monthly Weather Review*, 81(2):38–40, Feb. **1953.** 2 figs., table, 2 refs., 2 eqs. **MH-BH**—In 27½ hours, 87 in. of snow was reported at Silver Lake, Colo. This exceeds any previous record in the United States for so short a period. The Giant Forest, Calif. snowfall of Jan. 18–19, 1933 which was previously held to be the greatest for the United

States, recorded 60 in. in 24 hours, and on Feb. 12–14, 1926, 87 in. fell in 3 days at the same place, and 96 in. (on Dec. 6–10, 1933) in 4 days at Vanceboro, Maine. The Silver Lake storm is analyzed in detail, with charts showing isolines of snow depth and water equivalents in terms of percentage of mean annual precipitation at that and nearby stations. From these charts, it appears that the record is reliable. *Subject Headings:* **1. Record snowfalls 2. Snow density data 3. Snowfall extremes 4. Silver Lake, Colo.**—*M.R.*

5.2–219 551.578.45:551.524.37

Calef, Wesley (*Univ. of Chicago*), **The winter of 1948–49 in the Great Plains.** *Association of American Geographers, Annals*, 40(4):267–292, Dec. **1950.** diagrs., refs. **DLC**—Case history of a series of snowstorms, blizzards, drifting and sleet storms that occurred on Nov. 17–19, 1948, Jan. 2–5, Jan. 15 and Feb. 15, 1949 in South Dakota, Nebraska, Kansas, Oklahoma and Texas during a winter which is claimed to have been the severest within memory or on record. Synoptic situations are referred to in general terms and characteristics, progress and duration of the individual storms pointed out in a descriptive chronological manner. Thorough attention is given to the effect of the storms on power and communication lines, road traffic and human and animal life and to warning services and rescue and recovery work. Areas affected by the storms are indicated on charts. *Subject Headings:* **1. Severe winters 2. Snowstorms 3. Great Plains.**—*G.T.*

5.2–220 551.578.45

§Johnson, Ernest C. (*U. S. W. B., Albany, N. Y.*) and Mook, Conrad P. (*Wash. Natl. Airport, Wash. D. C.*), **The heavy snowstorm of January 28–30, 1953 at the eastern end of Lake Ontario.** *Monthly Weather Review*, 81(1):26–30, Jan. **1953.** 3 figs., 3 refs. **MH-BH**—Synoptic analysis of heavy snow fall with depth of new snow up to 36 in. based on surface weather maps. Occasional snow bursts in this region are caused by the temperature contrast between the air and the surface water of the lake, and can occur if a LOW moving northeastwards across the Great Lakes is blocked to the east. *Subject Headings:* **1. Snowstorms 2. Synoptic studies 3. Lake Ontario.**—*A.A.*

5.2–221 551.578.45

Kohlbach, Walter, **Ungewöhnlicher Schneefall im mittleren Niedersachsen am 3.3. 1949.** [Unusual snowfall in central Lower Saxony, March 3, 1949.] *Annalen der Meteorologie*, 5(6):189–190, **1952.** fig. **DWB**—Lines of equal snow depth show a streak of 10–25 cm from Hannover to Elbe mouth. Snow fell on W side of a cold air mass moving S from Scandinavia. *Subject Headings:* **1. Snowstorms 2. Saxony, Germany.**—*C.E.P.B.*

5.2–222 551.578.45

§McGuire, James and Penn, Samuel (*U. S. W. B., Boston*), **Why did it snow at Boston in April?** *Weatherwise*, 6(3):78–81, June **1953.** figs. **MH-BH**—The storm on April 13, 1953, which brought 2 to 8 in. of snow to Boston and vicinity (greatest that late since 1933 and 1918) is described and analyzed in terms of upper air soundings and surface synoptic charts. Theories to account for the phenomenal cooling at all levels are enumerated and the most likely one developed: namely, cold air advection at 700–900 mb and local cooling by means of the falling snow and loss of latent heat in melting as it fell to account for the 920–1000 mb level cooling which could not have been advective. *Subject Headings:* **1. Snowstorms in spring 2. Synoptic studies 3. Boston, Mass.**—*M.R.*

5.2–223 551.578.46:551.501

*Austria. Hydrographisches Zentralbüro, **Die Schneeverhältnisse in Österreich im Zeitraum 1901–1950.** [Snow conditions in Austria in the period 1901–1950.] *Austria. Hydrographisches Zentralbüro, Beiträge zur Hydrographie Österreichs*, No. 25, **1952.** 3 v. entirely tables. fold. map. **DWB**—For a large number of stations the following mean and extreme data are presented: date of first snowfall, first and last date and number of days with snow cover and with winter snow cover, number of days with snowfall, total height of fresh snow, maximum snow height. Data are given for each period of 10 and 25 years as far as

available; mean data also for the longest available period, extreme values for 1931–1950. General arrangement by catchment areas. First volume contains Rhine basin (25 stations), Inn with Salzach and Danube above the Inn (122 st.); second volume, Danube basin below the Inn river (239 st.); third volume, Mur and Raab basin (95 st.), Drau basin (93 st.). Second volume contains an excellent hydrographic map showing location of snow gages, catchment areas and isohypses. *Subject Headings:* **1. Snowfall data 2. Snow surveys 3. Hydrographic maps 4. Long period records 5. Austria. I. Nemmert, Walter** (*comp.*).—*A.A.*

5.2–224 551.578.46(494)

de Quervain, Marcel; Zingg, Th, Roch, A. and Schild, M. (*Davos Weissfluhjoch*), **Ueber die Lawinenkatastrophen in den Schweizeralpen Januar und Februar 1951.** [Avalanche catastrophes in the Swiss Alps Jan. and Feb. 1951.] *I.U.G.G. International Association of Scientific Hydrology, Brussels, 1951, Transactions*, v. 1:332–346, **1952.** 15 figs. **DWB**—Jan. precipitation measured at Davos since 1867 seems to be increasing and was 350% of the normal in 1951, higher than ever before. Other places recorded up to 530%, precipitated within a few days after the people began to complain that there is a deficiency of snow for tourists. The heavy snowfall resulted in an almost unprecedented series of avalanche catastrophes, recurring again in Feb. The development of snow conditions is shown by sample snow profiles, giving depth, temperature and mechanical properties, as well as snow maps. Synoptic situations are briefly characterized. Due to low temperatures during the spring no great floods occurred. Measures used to prevent avalanche catastrophes are summarized. *Subject Headings:* **1. Avalanches 2. Snowfall extremes 3. Switzerland.**—*A.A.*

5.2–225 551.578.46(23)

Friedel, H. (*Lienz*), **Gesetze der Niederschlagsverteilung im Hochgebirge.** [Laws of precipitation distribution in Alpine regions.] *Wetter und Leben*, 4(5/7):73–86, July **1952.** 4 figs. **MH-BH**—The distribution of the snow line (old snow) during the melting season is almost entirely dependent on relief and microclimate. Diagrams are given showing the effect of direction, steepness and height of slopes, based on planimetric measurements of areas covered by snow. The influence of wind is discussed. *Subject Headings:* **1. Snow distribution 2. Orographic effects 3. Mountain meteorology 4. Wind effects on snow melt 5. Austrian Alps.**—*A.A.*

5.2–226 551.578.46

Hawke, E. L., **Midsummer snow on Braeriach.** *Weather*, 8(4):121, April **1953.** 2 photos, table. **MH-BH**—Two panoramic views of Braeriach (Aberdeen, 4248 ft) show area covered by snow in July 1951 (700,000 sq yds surveyed) and 1952 (35,000 sq yds estimated). Difference in weather Nov.–June set out. *Subject Headings:* **1. Snow cover variations 2. Braeriach, Scotland.**—*C.E.P.B.*

HYDROMETEOROLOGY

See also: **Arid zone hydrology** (UNSCO), 5.2–8; **Hydrology** (Wundt), 5.2–9; **Evaporation calculation, S. Norway** (Høiland, Palm, Riis), 5.2–188; **Agricultural research and education** (Turpin), 5.2–190.

5.2–227 551.579:551.588

Budyko, M. I., **O klimaticheskikh faktorakh stoka.** [On climatic factors of runoff.] *Problemy Fizicheskoĭ Geografii*, Moscow, 16:41–48, **1951.** 6 figs., 9 refs., 2 eqs. **DLC**—The theoretical formula for determining the relationship between mean annual runoff and climatological elements, irrespective of basin characteristics, proposed is:

$$f = r\left[1 - \sqrt{\frac{R}{Lr}\, th\, \frac{Lr}{R}\left(1 - ch\, \frac{R}{Lr} + Sh\, \frac{R}{Lr}\right)}\right]$$

f—runoff; r—mean annual precipitation; R—mean radiational balance at surface; L—latent heat of evaporation. Using the mean radiational balance over the land surface in moderate latitudes the author tested this equation with the results of actual observations; a high degree of

precision was revealed for basins, with both average and large runoff coefficients. This formula explains the empirical dependence of runoff on precipitation and on the variation of runoff in mountainous regions. *Subject Headings:* **1. Runoff 2. Climatic influences.**—*I.L.D.*

5.2–228 551.579

Budyko, M. I. and Drozdov, C. A., **O zakonomernostiakh vlagooborota v atmosfere.** [The regularity of moisture exchange in the atmosphere.] *Akademiia Nauk, SSSR, Doklady,* 90(2):167–170, May 11, **1953.** 2 tables, 5 refs., 4 eqs. **DLC**—Author derives the formula $K=\frac{r}{r_a}=1+\frac{EM}{2\bar{u}\omega}$; r—total amount of precipitation; r_a—precipitation, brought into a given area by advection, E—evapotranspiration, $\bar{u}$—mean velocity of the air current, ω—water vapor content of the atmosphere. The advective moisture is completely consumed within a region if its area is greater than $M_1=\frac{\omega\bar{u}}{r-\frac{1}{2}E}$. Monthly and annual values of all components involved are computed for the European part of the Soviet Union. *Subject Headings:* **1. Hydrologic cycle 2. Moisture exchange.**—*A.A.*

5.2–229 551.579.2

*Fedorov, L. T., **Issledovaniia i raschet maksimal'nykh raskhodov snegovykh poiovodiĭ rek evropeĭskoĭ chasti SSSR.** [Investigation and calculation of the maximum discharge in the snow floods of rivers in the European U.S.S.R.] *Problemy Regulirovaniia Rechnogo Stoka,* Moscow, 5:140–238, **1952.** figs., tables, bibliog. p. 236–238, appends. **DLC**—One of the best sources of data (400 catchment areas) for the study of springtime floods resulting from snow melt and for the establishment of relationships between maximum discharge and meteorological conditions, percentage of forests, bogs, etc. Charts present (for European U.S.S.R.) the average duration of the temperature transition from 0 to 5°C, mean flood runoff, topographic characteristics, date of the temperature transition through 0°C, and the variability of maximum runoff. In his semiempirical approach the author considers the water content of snow, losses by evaporation, infiltration and percolation, air temperature, radiation energy, geographical direction and simultaneousness of snow melt, surface runoff, accumulation, formation of hydrographs, etc. Furthermore, the effect of artificial measures in agriculture and forestry is discussed. *Subject Headings:* **1. Spring floods 2. Snow melt 3. River discharges 4. Hydrologic data 5. Topographic influences 6. European U.S.S.R.**—*A.A.*

5.2–230 551.579:551.422

Forman, Jonathan and Fink, Ollie E. (*eds.*), **Water and man, a study in ecology.** Columbus, Ohio, Friends of the Land, **1950.** 407 p. photos, figs., refs. **DWB**—A collection of 33 papers on numerous aspects of applied hydrology, written in popular style by some of the best specialists available in each field. Since the main purpose of the book is the popularization of watershed management, soil conservation, etc., the specialist will not find much data or many technical discussions of new ideas in this comprehensive review, but the layman will appreciate the easily understandable presentation. Among the many topics covered are: the hydrologic cycle, splash of raindrops and erosion, irrigation, evapotranspiration, transpiration control, soil moisture, rainfall and water resources, effect of atmospheric moisture on human health and efficiency, etc. *Subject Headings:* **1. Applied hydrology 2. Watershed management 3. Soil conservation 4. Human ecology.**—*A.A.*

5.2–231 551.579:016

†International Union of Geodesy and Geophysics. Association of Scientific Hydrology, **[International Bibliography of Hydrology]. Hydrologische Bibliographie, Deutschland.** [Hydrological Bibliography, Germany.] First issue for 1936, pub. 1938. Issue for 1945/49, pub. 1953, Koblenz. Issue for 1950, pub. 1953. Place and issuing body varies. Annual. **DLC**—This series, while conforming in general outline and format with those issued by other countries (U. S., France, Czechoslovakia, Sweden, etc.) under the auspices of the International Association of Scientific Hydrology, I.U.G.G., has a number of features which make it unique.

Printed by letter press, with great contrast between author, title, journal, collation and abstract, the bibliography is the most readable of any series yet issued. A list of journals gives place of publication of each. No abbreviations are used in abstracts. The first section (Hydrometeorology) of each annual volume, contains important references on climatic changes, rain, snow, evaporation and humidity. Other sections are: II. Runoff, III. Lakes, IV. Glaciers, V. Ground water and springs, VI. Hydrologic cycle, VII. Applications of other sciences to hydrology, VIII. General works, IX. Miscellaneous. At the end of each volume is an author index. The 1950 issue (Koblenz 1953) contains 331 annotated references. *Subject Headings:* **1. Hydrometeorology 2. Hydrologic bibliographies 3. Germany.**—*M.R.*

5.2–232 551.579:551.588.6

†*Molchanov, A. A., **Les i vlaga.** [Forest and moisture.] *Akademiia Nauk, SSSR, Institut Lesa. Nauchnye Voprosy Polezashchitnogo Lesorazvedeniia,* 1:83–108, **1951.** 3 figs., 8 tables, refs., bibliog. p. 106–108. **DLC**—A detailed literature review on the influence of forests on the hydrologic cycle covering 61 Russian, but only 10 foreign, sources. Author takes up the general water balance of the earth and the influence of forests on precipitation, presents his own data on interception ("condensation" according to the author), discusses the relation between transpiration and green mass or total production of the vegetation and gives annual transpiration amounts for forests. The last chapter deals with the influence of forest shelter belts on snow cover, snow retention and soil moisture. *Subject Headings:* **1. Forest influences 2. Hydrologic cycle 3. Evapotranspiration 4. Microclimates 5. Soil moisture 6. U.S.S.R.**—*A.A.*

5.2–233 551.579:551.311

Nikitina, A. I., **O nekotorykh voprosakh vliianiia pochv na usloviia stoka.** [Some problems on the influence of soils on runoff conditions.] *Voprosy Geografii,* No. 26 Gidrologiia, p. 158–167, **1951. DLC**—General discussion from the geographical point of view, covering denudation, stability of soil against erosion dependent on soil structure, soil modification by agricultural activity and soil conservation. *Subject Headings:* **1. Soil influences 2. Runoff 3. Soil conservation 4. Soil erosion.**—*A.A.*

5.2–234 551.579 551.582.2(756)

*North Carolina. Dept. of Conservation and Development. Div. of Water Resources and Engineering, **Hydrologic data on the Roanoke and Tar River Basins, 1871–1945. 1952.** 132 p. tables, figures and maps. Photoprinted. **DWB**—Tables of mean monthly, weekly, maximum and minimum daily discharges, of monthly and annual amount of precipitation, means and extremes of temperature (5 stations) for the large basins in northern N. Carolina. Maps show the mean annual rainfall and temperature (1921–45). *Subject Headings:* **1. Runoff data 2. Climatic data 3. North Carolina.**—*A.A.*

5.2–235 551.579

Ol'dekop, E. M., **O geneticheskoĭ formule stoka.** [On the genetic runoff formula.] *Leningrad. Gosudarstvennyĭ Gidrologicheskiĭ Institut, Trudy,* No. 14(68):5–25, **1949.** 9 figs., 2 tables, 5 refs., 44 eqs. **DLC**—In the classical genetic theory of runoff a sudden rain in the beginning of a time interval is supposed. The author assumes a uniform rain distribution during the time. The theory is prescribed for runoff from slopes. *Subject Headings:* **1. Runoff theory 2. Hydrographs.**—*A.A.*

5.2–236 551.579:519.2

Pantle, Richard (*Stuttgart*), **Richtigkeit-Klarheit-Mathematik bei Abfluss-Dauerlinien und Abfluss-Mittelwerten.** [Correctness-clarity-mathematics by duration curves and mean values of runoff.] *Die Wasserwirtschaft,* 43(3):72–75, Dec. **1952.** 3 figs. **DWB**—Objects to proposals made by WUNDT in **Die Streuung bei Abflussmittelwerten.** *Ibid.,* 42(10):320–324, July **1952.** Author prefers actual measurements instead of "doubtful mathematical derivations." *Subject Headings:* **1. Duration curves 2. Hydrologic statistics. I. Wundt, W.**—*A.A.*

5.2–237 551.579

*Pećinar, Miladin M., **Određivanje kretanja protoka na vodotocima.** [Determination of variation of river runoff.] *Yugoslavia. Hidrometeorološka Služba. Hidrometeorologiški Glasnik*, 1(1):14–21, Aug., **1948.** 2 tables, 2 figs. In Serbian. **DWB**—Analysis of runoff data as the important factor for various hydrologic projects, and review of the Lim River hydrologic regime at numerous points during 1946–1947. The author discusses the runoff variations on this river and its dependence on weather and local conditions. *Subject Headings:* **1. Runoff measurements 2. Hydrologic data 3. Lim River, Yugoslavia.**—*N.T.Z.*

5.2–238 551.579(44)

Péguy, Charles P. (*Univ. of Rennes*), **Caractéristiques hydrologiques de l'année 1950; précipitations et écoulement.** [Hydrologic characteristics for 1950; precipitation and runoff.] *Société Hydrotechnique de France, Paris. Annuaire Hydrologique*, **1950.** p. 11–17. [Dec. 1951?] 3 figs., 2 tables. **DWB**—The seasonal precipitation and runoff in various parts of France, especially in the mountain areas, are described and charts showing the actual values for each day in 1950 at a large number of stations are presented. *Subject Headings:* **1. Hydrologic regime 2. France.**—*M.R.*

5.2–239 551.579

Potter, W. D. (*Bur. of Public Roads, Wash , D. C.*), **Rainfall and topographic factors that affect runoff.** *American Geophysical Union, Transactions*, 34(1):67–73, Feb. **1953.** figs., 4 tables, 6 refs. Discussion by Ralph W. Powell, *ibid.*, No. 6:952–953, Dec. **1953. MH-BH**—Study based on 51 watersheds located in the Allegheny-Cumberland Plateau and ranging in size from 100 to 350,000 ac. Runoff records from 8 to 11 years. Multiple correlation equation developed showing the relation between the logarithms of peak rate of runoff (10-year recurrence interval), area, topography, rainfall intensity and frequency. Extrapolation for 25 and 50-year recurrence interval attempted. Almost no effect of vegetation cover. POWELL shows that the results can be slightly improved by introducing the dimensionless ratio length to square root of area. *Subject Headings:* **1. Runoff 2. Rain intensities 3. Topographic effects 4. Allegheny-Cumberland Plateau, United States. I. Powell, Ralph W.**—*A.A.*

5.2–240 551.579:551.481.215.1

Rundo, Alfred, **Charakterystika przepływu Noteci na podstawie pomiarów z lat 1890–1924.** [A characteristic of the discharge of Notéc River on basis of measurements in the years 1890–1924.] *Poland. Państwowy Instytut Hydrologiszno-Meteorologiczny, Wiadomości Służby*, 1(5):331–344, **1949.** figs., tables. **DWB**—New results of observations for the Notéc River (Netze) are compared with results of KELLER given previously in the "Jahrbücher für die Gewässerkunde Norddeutschlands." The characteristic water levels, discharge curves, discharge and runoff values for the mean, low, high and annual mean water level are discussed. *Subject Headings:* **1. River discharges 2. Runoff 3. Notéc River, Poland.**—*A.A.*

5.2–241 551.579

Sokolov, A. A., **O geograficheskom i geofizicheskom napravleniiakh v gidrologii.** [Geographical and geophysical tendencies in hydrology.] *Voprosy Geografii*, No. 26, Gidrologiia, p. 34–45, **1951.** refs. **DLC**—The problem: whether hydrology is a geographical, geophysical or engineering science. Author emphasizes the importance of the geographical approach, but finally agrees that a synthetic one would be desirable. *Subject Headings:* **1. Hydrology 2. Geographical methods.**—*A.A.*

5.2–242 551.579.1(569.4)(058) 551.577.2(569.4)

*Israel. Water Dept. Hydrological Service, **Hydrological yearbook of Israel, 1947/48–1949/50.** Jerusalem, **1952.** 1 piece, 649 p.+XXIX. mostly tables and graphs; fold. maps of catchment areas and spring location. In English and Hebrew. Price: L.I.6.000. **DWB**—Rarely a hydrological yearbook gives such well arranged basic data for the computation of the hydrologic cycle and related problems of arid zones as this summary of data for runoff and rainfall. After a Preface by the Director, M. GOLDSCHMIDT, the first part contains hydrographs of daily discharges and monthly accounts of total surface and dry weather runoff for each

year and annual amounts of these values, as well as precipitation for each year of the w observation period, which is in most cases rather short. Average precipitation for the "no period" 1901–30, based on a map revised in 1952, given for each catchment area; data c 9 rivers and 22 wadi areas. Discharge totals for springs and water levels for numerous gr water stations are compared with current monthly rainfall amounts. Data for chem properties, silt content and single discharge measurements round out the hydrologic pict *Subject Headings:* **1. Hydrologic data 2. Precipitation distribution 3. Annual hydrolo reports 4. Israel. I. Goldschmidt, M.**—*A.A.*

CLIMATOLOGY AND BIOCLIMATOLOGY

CLIMATOLOGY

See also: **Our physical environment** (Guddum, Knowles), 5.2–3; **Restless atmos.** (Hare), 5.2–4; **Vertical motion and vorticity budget in blocking situation** (Elliassen, Herbert), 5.2–107; **Agricultural research and education** (Turpin), 5.2–190.

5.2–243 551.58(09)

Borchert, John, **Die Entwicklung der Klimatologie in den U.S.A. im letzten Jahrze** [The development of climatology in the U.S.A. in the last ten years.] *Die Erde*, 2:158– **1953. DLC**—Greatest development has been establishment of over 600 stations on airp plus about 5000 climatological stations. The numerous data publications, and Institutio doing research in climatology or applied climatology are mentioned. The present tende is for collection of data to outrun discussion; machine analysis may be a solution. *Subj Headings:* **1. Progress in climatology 2. United States.**—*C.E.P.B.*

5.2–244 551.58:629

Brice, D. A., **The jet transport and the North Atlantic.** *Aeronautics*, London, 29(1):32– Aug. **1953.** 8 figs. **DWB**—Account of difficulties, mainly of weather and wind, in E crossing Britain–America. Weather at Gander is especially bad and unreliable; diversi operations and landing aids are discussed. Other disadvantages of Gander are mention To avoid unpredictable jet stream by high flying jet aircraft, routing via Iceland is suggest otherwise a 100 kt headwind must be allowed for or route via Azores taken. *Subject Headin* **1. Aeronautical climatology 2. North Atlantic.**—*C.E.P.B.*

5.2–245 551.58:63

Curry, Leslie, **Climate and economic life: a new approach with examples from the Unit States.** *Geographical Review*, 42(3):367–383, July **1952.** 4 figs., table, 22 refs. **DWB** Climatic calendars can be constructed to give farmers, marketers, fuel suppliers and oth industrialists, whose produce depends on climate, a quantitative guide to control of operatio and especially of labor utilization. The similarity of the cumulative curve of potential eva oration (according to THORNTHWAITE's formula) to the development rate of peas, and a plication of this analogy to conditions along the Atlantic seaboard from Florida to Maine used to illustrate the manner in which harvests could be staggered to take advantage optimum labor supply. Frost and solar radiation are other important factors to be considere An example of a climatic calendar considering the limiting effect of frost when combined wi development curve based on evapotranspiration is given for corn and cotton growing in nort east Texas. *Subject Headings:* **1. Agricultural climatology 2. Industrial climatology 3. C matic calendars 4. Evapotranspiration.**—*M.R.*

5.2–246 551.58:

Gordon, A. H., **A renaissance of climatology?** *World Meteorological Organization, WM Bulletin*, 2(3):62–66, July **1953. DWB**—Report on the first session of the WMO Commissio for Climatology (CCI) held in Washington, D. C. March 12–25, 1953. Delegates representi the 20 countries and 5 international organizations participating are listed and shown in

photograph. Recommendations made by the four working committees regarding: a) policy and organization, b) methods and requirements, c) distribution, publication and application of data and d) draft provisional technical regulations are summarized. Objectives of the seven working groups established to act between the first and second sessions are outlined. *Subject Heading:* **1. WMO. Commission for Climatology.**—*G.T.*

5.2–247 551.58:629.13

Wagner, Richárd, **A repülés éghajlati adottságai a Földön.** [Aviation climates of the earth.] *Időjárás*, 56(1/4):55–66, Jan./April **1952.** 6 figs. Russian and French summaries p. 123–124. **DLC**—The effect of climate on aviation might be expressed by the frequency of every climatic factor. However, the author declares, such frequency values cannot be derived from available climatological data or computations. Since practically all weather phenomena depend on temperature and precipitation, an aviation-climate index can be derived from monthly and annual averages of these two elements. For computing such an index (AK) the author suggests the formula $AK = \frac{MT \times RR}{20}$. MT is a numerical factor representing average temperature with 1 for 15°C, 2 for 13°C, etc. up to 240 for −51°C. RR is the average rainfall in mm (for temperatures above 15°C, this is increased by 2% for 15.1–17°, 4% for 17–18°, etc. up to 25% for more than 30°C, on account of the probability of thunderstorms). The author applies his index to weather conditions throughout the world and presents world charts of yearly and monthly aviation climate. *Subject Headings:* **1. Aeronautical climatology 2. Climatic classifications.**—*G.T.*

5.2–248 551.581

†Lauer, Wilhelm; Schmidt, Rolf-Diedrich; Schröder, Rudolf and Troll, Carl, **Studien zur Klima- und Vegetationskunde der Tropen.** [Studies on the climatology and vegetation of the tropics.] *Bonner Geographische Abhandlungen*, Bonn, No. 9, **1952.** 182 p. figs., tables, charts, bibliogs. **DWB**—The studies in this issue are as follows: Lauer, Wilhelm: Humid and arid seasons in Africa and South America and their relation to the vegetation zone; Schmidt, Rolf-Diedrich: Precipitation distribution in Andean Colombia; Schröder, Rudolf: The distribution of mean atmospheric temperature in Colombia; Troll, Carl: Local winds of the tropical mountains and their influence upon precipitation and vegetation. These items are abstracted individually. *Subject Headings:* **1. Tropical climatology 2. Vegetation.**—*I.L.D.*

CLIMATE OF PARTICULAR PLACES

See also: **Natural basis of plant yield, Middle Europe** (Filzer), 5.2–1; **West weather situation over S. Baltic Sea and N. German lowland** (Meade), 5.2–68; **Hydrologic data, Roanoke and Tar River Basins,** 1871–1945 (N. C. Dept. of Conservation and Development), 5.2–234; **Bibliography on climate of SE Asia and E. Indies, p. 211-269.**

5.2–249 551.582.1(85):551.588

Howell, Wallace E., **Local weather of the Chicama Valley (Peru).** *Archiv für Meteorologie, Geophysik und Bioklimatologie, Ser. B*, 5(1):41–51, **1953.** 3 figs., English, German and French summaries p. 41–42. **MH-BH**—The diurnal cycle of cloud and weather in the Chicama Valley near equator on west of Peruvian Andes is described on typical rainy and dry days and on sea shore. Land being warmer than sea, except in early morning, circulation is mainly onshore at low levels and up mountain slopes, with a return flow aloft which combines with overrunning E wind. Vertical sections of circulation are sketched. Rainfall pattern depends on local orography but the large variations from day to day depend on stability of modified Pacific air and overlying easterlies, resulting from large scale pattern. *Subject Headings:* **1. Local climates 2. Climatic influences 3. Climate of Chicama Valley, Peru.**—*C.E.P.B.*

5.2–250 551.582.2(66,47,44)

*§Buettner, Konrad J. K. and Kuhn, Heinrich, **Climates of the German theaters of operations.** (In: **German aviation medicine, World War II.** Washington, D. C., U. S. Govt. Print-

ing Office, **1950.** v. 2, p. 737–756. 20 figs., 7 tables, 26 refs.) **DWB**—A brief summary of the climatic characteristics of the hot coastal steppes and of the adjacent North African desert, and of the snow tundra climate of northern Russia and Finland is presented. For the former zone the discussion covers the annual and diurnal air temperature regime as illustrated by Tripoli and El Azizia, the frequency of annual maximum and minimum of air temperature in the shade, the radiant heat load of the sun, the global radiation, the temperature of the free atmosphere, the bioclimate resulting from the interaction of wind, temperature, radiant heat and moisture, sand, and the microclimate. In regard to the latter, the author discusses the pressure, temperature, precipitation and wind, low temperatures of the free atmosphere, and the weather situation during the winter of 1941–42 and 1942–43. Data are presented in tables and graphs; synoptic charts illustrate weather situations on the eastern and northeastern theaters of operation. *Subject Headings:* **1. Coastal climates 2. Steppe climates 3. Desert climates 4. Climate of Northwest Africa 5. Climate of Northern U.S.S.R. 6. Climate of Finland. 7. Finland 8. Northwest Africa 8. U.S.S.R.**—*I.L.D.*

5.2–251 551.582.2(689)

*Southern Rhodesia. Meteorological Dept., **Climate handbook, Supplement No. 1: Climatological tables for the period July 1931 to June 1951.** June **1952.** 158 p. mostly tables. This Supplement appeared in advance of the Climate Handbook, which will contain a discussion of the data presented here. **DWB**—A network of meteorological stations was established in Southern Rhodesia between 1931 and 1933 to meet the needs of civil aviation. About 40 stations are listed, with the period 1933–1948 used wherever possible for means. The network was changed from one composed of observers at police camps and jails to one of trained and paid native observers, between 1948 and 1951. This change, which often involved change of station location, was completed in 1951. Tables consist of monthly values for each year of record, of temperature, precipitation and 8:30 A.M. dry and wet bulb, dew point, pressure and cloud amounts (tenths) in standard form and units. Complete history and location of each station is appended. *Subject Headings:* **1. Climatic data 2. Meteorological networks 3. Southern Rhodesia.**—*M.R.*

5.2–252 551.582.3:551.585

Miller, A. Austin, **Three new climatic maps.** *Institute of British Geographers, Publication,* No. 17, Transactions and Papers, 1951, p. 15–20, **1952.** fig., 3 maps, 9 refs. **DLC**—World maps on Gall's projection are given showing: 1) T°F/R in.; 2) Duration of temperature seasons (months over 43°F; in hottest regions 64°F in cloudiest month); 3) Accumulated temperature (month-degrees above 43°F). *Subject Headings:* **1. Climatic classifications 2. Climatic charts.**—*C.E.P.B.*

5.2–253 551.582.3(71)

Tallman, E. G., **Hydrology in Canada.** *I.U.G.G. International Association of Scientific Hydrology, Brussels,* 1951, *Transactions,* 1:78–87, **1952.** 2 tables. **DWB**—A valuable report presenting Canadian maps of regional land types, main drainage systems, average annual precipitation and temperature, as well as average annual data for rain and snow equivalent, extreme and mean runoff, evapotranspiration and temperature for 10 catchment areas. Current research is briefly summarized. *Subject Headings:* **1. Hydrologic research 2. Climatic charts 3. Hydrologic cycle 4. Canada.**—*A.A.*

CLIMATIC CHANGES

5.2–254 551.583

Deacon, E. L., **Climatic change in Australia since 1880.** *Australian Journal of Physics,* 6(2):209–218, June **1953.** 5 figs., 2 tables, 9 refs. **DWB**—Analyses of temperature, precipitation and barometric pressure of Australia for the period 1881–1910 and 1911–1940 and 1941–1950, were carried out in order to establish evidence for an appreciable climatic change in Australia since 1880. Moving 10-year averages of mean daily maximum temperature were calculated for each 30-year period for representative stations; all localities showed lower mean summer maximum temperature in the 1911–1940 period; the average fall is 2.5°F; changes in

mean maximum temperature at other times of the year and in mean minimum temperature are smaller. For the period 1911–1950 the summer rainfall over much of southern Australia was considerably greater than in the 1881–1910 period; winter rainfall declined during the 1911–1940 period. Finally, it is estimated that the southward displacement in the mean northerly limiting position of the high pressure axis was about 3° of latitude in the second period. The record 1941–1950 manifested the same trends as the earlier period. *Subject Headings:* **1. Climatic variations 2. Australia.**—*I.L.D.*

5.2–255 551.583:551.311.12

Lawrence, Donald B. (*Univ. of Minnesota*), **Glacier fluctuation in northwestern North America within the past six centuries.** *I.U.G.G. International Association of Scientific Hydrology, Brussels, 1951, Transactions*, 1:161–165, **1952.** 2 figs., 13 refs. **DWB**—Historical evidence based on the age of the oldest trees in the moraine region of glaciers indicates that the advance of glaciers in North America attained the maximum for the last six centuries in the first half of the 18th century. The recessional history of the Herbert Glacier, Alaska, is treated in more detail utilizing also the location of moraines. A relation to sunspot minima is suspected. *Subject Headings:* **1. Glacier retreat 2. Climatic changes 3. Dendrochronology 4. Sunspots 5. Herbert Glacier, Alaska.**—*A.A.*

5.2–256 551.583.13

Péczely, György, **A légnyomás, hömérséklet és csapadék ritmusairól.** [Fluctuations of pressure, temperature and precipitation.] *Időjárás*, 56(7/8):226–234, July/Aug. **1952.** 2 figs., tables, 3 refs., eqs. Russian and French summaries p. 256–257. **DLC.** Also: **Adatok a nyár és tél hömérsékleti ritmusaihoz.** [Data on temperature fluctuations in summer and winter.] *Ibid.*, (9/10):296–297, Sept./Oct. **1952.** fig., table. **DLC**—Periodogram analysis of temperature, precipitation and pressure records for Budapest, Magyaróvár, Debrecen and Szeged (length of records 63–183 years). Periodicities and correlation between fluctuations of the different elements are established. The author states, however, that the high value of probable deviation (±12%) precludes the effective use of extrapolated series for forecasting purposes. *Subject Headings:* **1. Pressure oscillations 2. Temperature oscillations 3. Precipitation regime 4. Hungary.**—*G.T.*

5.2–257 551.583.14

Engel, Leonard, **The weather is really changing.** *New York Times Magazine*, July 12, **1953.** p. 7, 36–37. illus. Condensed version in: *Science Digest*, 34(4):1–5, Oct. **1953. DWB**—Recent unusual weather in the U.S.A. is not likely a result of atom bomb tests in Nevada or cloud seeding activities throughout the west, but is probably due to large scale changes in the general circulation pattern. Theories which are currently popular regarding cause of marked warming of Arctic, retreat of glaciers, etc. are: 1) C.E.P. Brooks' hypothesis that cooling of one continent would slow down general circulation between warm and cold areas and result in increased glaciation, which would "snowball", or the opposite effect of warming which would speed up the exchange of heat and decrease glaciation at an accelerating rate; 2) Wexler's decreased volcanic dust hypothesis and 3) Carbon dioxide increase. Results on economic activity were noticed. *Subject Headings:* **1. Climatic change theories 2. Climatic trends 3. Warming of Arctic.**—*M.R.*

5.2–258 551.583.14:63(988)

*†Jensen, Ad. S. and Fristrup, Borge, **Den arktiske klimaforandring og dens betydning, saerlig for Grønland.** [Arctic climatic fluctuation with special reference to Greenland.] *Geografisk Tidsskrift*, Copenhagen, 50:20–47, **1950.** 8 figs., bibliog. p. 41–44. In Danish, English summary p. 44–47. **DLC**—Author reviews observations and contributions of a great many internationally known scientists and explorers whose works seem to favor the theory of a general climatic change. Particular consideration is given to the influence on the fauna, flora, forestry and agriculture in the Northern Hemisphere with special emphasis on improved cod fishing in Greenland as a direct result of climatic change. The article is accompanied by curves showing the annual temperature at Jacobshavn 1874–1940 and for Jan. and

July 1873–1940. Maps show the Freja Gletcher (Clavering Island) as it was in 1937 and in 1948 and the cod fishing grounds of 1920/21, 1930/31, 1938/39 and 1947/48 in Greenland. *Subject Headings:* **1. Climatic trends 2. Climatic effects 3. Cod fishing 4. Greenland.**—*W.N.*

5.2–259 551.583.14

Rodewald, Martin, **Ändert sich unser Klima?** [Is our climate changing?] *Umschau*, 53(18):552–555, Sept. 15, **1953.** 7 figs., 4 refs. **DWB**—In recent years climatic changes have been local—e.g. cooler and rainier in most of U. S.—due to changes in circulation, but, on the whole, earth's surface is becoming warmer. This is especially so in great heat reservoir of the Atlantic. The change is only partly offset by high level changes. Author considers that the general trend towards a warmer climate is continuing; it may be due either to more heat received from the sun or less radiated from the earth. (*See also item* 3.7–182, July 1952, *MAB.*) *Subject Heading:* **1. Climatic trends.**—*C.E.P.B.*

MICROCLIMATOLOGY

See also: **Beginning of apple blossoming in Harburg . . .** (van Eimern, Kaps), 5.2–43; **Humidity measurements with thermoelectric psychrometer** (Diem), 5.2–53; **Local climatic conditions, Wales** (Howe), 5.2–142; **Wind factor and viticulture** (Bauer), 5.2–172; **Electrical conductivity of air in buildings** (Schilling, Carson), 5.2–301.

5.2–260 551.584

*Desing, Harald (*Innsbruck*), **Klimatische Untersuchungen auf einer grossen Blaike.** [Climatic investigation on large bare slope.] *Wetter und Leben*, 5(1/2):46–52, March **1952.** 2 figs., 3 tables, 5 refs. **DWB**—In connection with the afforestation of bare slopes resulting from soil slipping, the author measured atmospheric temperature and humidity and soil temperature during the period June 9–Nov. 6, 1950 on a bare slope, 1300–1500 m above sea level and planted with willows and alders. Similar measurements were also made in a pine forest. Data on mean 2 hourly values of temperature and relative humidity and diurnal march of soil temperature at depths from 0 to 25 cm are given in tables. The existence of a definite microclimate determined by vegetation and exposure is established. The differences in microclimate between bare surface and afforested stands is attributed to solar radiation. *Subject Headings:* **1. Microclimatology 2. Vegetation influences 3. Influence of exposure 4. Soil temperature data 5. Forest ecology.**—*I.L.D.*

5.2–261 551.584

Ito, S.; Nakausa, T. and Hata, S. (*Agricultural Exper. Stat., Tokyo*), **Microclimatic studies on the vegetable culture under a shelter.** *Journal of Agricultural Meteorology*, Tokyo, 7(3/4): 101–104, Nov. **1952.** 2 figs., 2 tables. In Japanese; English summary p. 104. **MH-BH**—Several meteorological factors were investigated under shelters sloped 30°, 50° and 90° to the ground. No marked differences of air temperature were observed among the sheltered and control plots. The earth temperature of a plot with a 30° inclined shelter was the highest till the middle of Jan., but later a plot with a 50° sloped shelter showed the highest earth temperature. The control plot always showed lower earth temperature than the sheltered plots. The slope most appropriate to maintain the earth temperature was investigated. *Subject Headings:* **1. Microclimatology 2. Shelter effects 3. Agricultural climatology 4. Soil temperatures.**—*From authors' abstract.*

5.2–262 551.584(54):551.506.9

*Venkatanarasinga Rao, M. B.; Balasubramaniyan, C. and Balasubramaniyan, A., **A brief note on micro-climatic studies at Coimbatore.** *Indian Journal of Meteorology and Geophysics*, 4(2):184–186, April **1953.** 3 tables, 8 refs. **MH-BH**—Average temperature, vapor pressure and humidity values based on data obtained in daily micro-climatic measurements in paddy, cholam and cotton fields are tabulated and discussed. The data are arranged according to various stages of the different crops. The measurements were made at Coimbatore during the period 1949–1951. *Subject Headings:* **1. Microclimatological data 2. Coimbatore, India.**—*G.T.*

5.2–263 551.584.31:551.43:634.94

Morbitzer, K., **Hang- and Graben-Temperaturen in einem Waldgebirge.** [Slope and valley temperature in a forested mountain.] *Wetter und Leben*, 4(11/12):197–201, Dec. **1952.** fig., table. **MH-BH**—Microclimatic temperatures were measured (thrice daily at fixed intervals for a period of four weeks) in the Fischbach Alps in order to determine the deviations from climatic norms that occur in typical forested mountains. Temperatures were measured at three different levels at a height of 2 m above the ground. An analysis of the data given in a table indicates that in a third of all cases on the average it was warmer on the slope than in the valley and in April in two-thirds of all cases; even the mountain slope at 1135 m was warmer than the valley. Spring is thus the relatively warm period owing to the favorable southern exposure. *Subject Headings:* **1. Microclimatology 2. Temperature variations 3. Forest influences 4. Mountain climatology 5. Austria.**—*I.L.D.*

5.2–264 551.584.31:634.94

Parker, Jonson (*Univ. of Idaho, Moscow, Idaho*), **Environment and forest distribution of the Palouse Range in northern Idaho.** *Ecology*, 33(4):451–461, Oct. **1952.** 8 figs., 3 tables, 15 refs. **DWB**—A comparison of the microclimate on the north and south slopes of various hills in the Palouse Range (near Moscow, Idaho) was made, based on air temperature 3 in. above the ground, soil temperatures at 4 depths, soil moisture, wind speeds (4-cup anemometers), relative humidity, snow depth, maximum and minimum temperature 6 ft above ground at 3 places (elevation 2770, 4100 and 4450 ft). Thermograph traces for the respective N, S and E, W slopes are shown. A general discussion of the climate and weather of the area is also included. Altitudinal differences in forest type, as well as differences due to aspect of exposure, were noted. *Subject Headings:* **1. Influence of exposure 2. Forest ecology 3. Microclimatology 4. Palouse Range, Idaho.**—*M.R.*

5.2–265 551.584.41:551.524.4

Christy, Harlan R. (*Ohio State Univ.*), **Vertical temperature gradients in a beech forest in central Ohio.** *Ohio Journal of Science*, Columbus, 52(4):199–209, July **1952.** 4 figs., 9 tables, 8 refs. Abstracted from reprint. **DLC**—Measurements by means of recording thermocouples were made from May to Dec. 1950 at eight stations from 4′ below the forest floor to 80′ above it. Average vertical temperature gradients given for different hours of the day as well as maximum and minimum temperatures compared with those of microclimate. *Subject Headings:* **1. Microclimate of forests 2. Vertical temperature gradient 3. Ohio.** —*A.A.*

CLIMATIC CLASSIFICATION

See also: **3 new climatic maps** (Miller), 5.2–252.

5.2–266 551.585

Meigs, Peveril, **Distribution of arid homoclimates: U.N. map 392, Eastern Hemisphere, [and] U. N. map, 393, Western Hemisphere.** *United Nations [Document]* E/2191/Add. 1*, May 6, **1952.** fold. maps. **DLC**—Maps show arid and semiarid regions based on deficit of precipitation in relation to evapotranspiration according to THORNTHWAITE (1948). Author separates extremely arid regions which show at least one year without rain. Seasons of precipitation and temperature of warmest and coldest month shown by classification symbol. *Subject Headings:* **1. Arid climates 2. Climatic classifications. I. Thornthwaite, C. W.**—*A.A.*

5.2–267 551.585.53

Pouquet, Jean (*Univ. of Paris*), **Les déserts.** [The deserts.] Paris, Presses Universitaires de France, **1951.** 124 p. 7 figs., refs., bibliog. p. (125). *Collection Que Sais-Je?* No. 500. **DWB**—Chap. II of this "pocket book" on the deserts, discusses the climate of the Sahara in relation to other desert areas of the world. Wind, dust, great temperature contrasts and extremes, range in temperature from summer to winter, precipitation (or lack of precipitation), flash floods, relation of climate to life (human, animal and vegetation), are discussed in connection with the morphology and habitability of the Sahara. The aridity index of DE MARTONNE figures strongly in the discussion. *Subject Headings:* **1. Desert climates 2. de Martonne index 3. Popular science books 4. Sahara Desert.**—*M.R.*

5.2–268 551.585.55:551.588.7:551.556.2

Chubukov, L. A., **Klimat zasuchlivykh raĭonov i vliianie polezashchitnykh lesnykh polos na ego izmenenie.** [Climate of drought regions and the influence of shelter belts on its modification.] Moscow, Izdat. "Znanie," **1951.** 24 p. 9 figs., 7 refs. **DLC**—Although the weather is constantly changing, the climate changes very slowly. Man cannot change the major features of the climate—the movement of air masses or cyclones—but can change the microclimate and thus make arid regions more habitable and productive. The basic features of the climate of the steppes of the U.S.S.R. are outlined, with emphasis on the radiation balance in the moist regions (near Moscow) and the drier regions around the Caspian. The solar energy that is absorbed in evaporation results in cooling the former region, whereas the latter region is warmed unmercifully because of lack of moisture to evaporate. Shelter belts and retention of snow cover by strips of various kinds are two ways of conserving moisture or reducing evaporation, etc. Quantitative data in charts and graphs show magnitudes and regional distribution of these variables. Effect on crop yields is effectively illustrated. *Subject Headings:* **1. Climatic amelioration 2. Steppe climates 3. Arid zone agriculture 4. Shelter belts 5. U.S.S.R.**—*M.R.*

5.2–269 551.585.7

Schedler, A., **Zum Klima des Kaunerberg-Hanges.** [The climate of the Kauner Mountain slope.] *Wetter und Leben,* 5(1/2):40–42, March **1953.** fig., 2 tables, ref. **MH-BH**—A local climatic study of the unusual precipitation condition characterizing the Tyrolean Inntal where annual rainfall amounts are less than those in the plains. An elevation and precipitation profile and a table of annual precipitation totals reduced to 1891–1930 period, and of air and soil temperatures on Kauner mountain during the warm period July 1–7, 1952 are given. *Subject Headings:* **1. Mountain climates 2. Precipitation amount 3. Climate of Kauner Mountain, Austria. 4. Kauner Mountain, Austria.**—*I.L.D.*

BIOCLIMATOLOGY

See also: **Animal reactions to temp. variations** (George), 5.2–138; **14 hr temp. important factor for plant life** (Jesser, Dimitz, Wilfinger), 5.2–139; **Air temp. and growing season of rice** (Nakamura), 5.2–145.

5.2–270 551.586(46)

Due Rojo, Antonio, **Notas bioclimatológicas.** [Bioclimatological notes.] *Revista de Geofisica,* Madrid, 11(43):299–305, July/Sept. **1952.** tables, diagrs., refs. **DWB**—Remarks on growing season, frosts, climagrams (temperature and relative humidity) for various parts of Spain, degree-day data based on temperatures $<15°$, $<12°$, or $>12°$ and $>15°$ for heating in winter and cooling in summer, respectively, diurnal temperature curve for Granada, etc. and errors in computing heating and cooling data from mean temperature data. *Subject Headings:* **1. Bioclimatology 2. Degree days 3. Granada, Spain.**—*M.R.*

5.2–271 551.586:61

Sargent, Frederick, II., **Meteorology and preventive medicine.** *Weatherwise,* 6(2):47–48, 58, April **1953. DWB**—The role of the meteorologist in public health service is discussed with emphasis on air conditioning for comfort; efficiency and health; and control of atmospheric pollution to relieve people from irritating or even toxic effects. The Donora, Penna., disaster is cited as an example of the devastating effect of industrial pollution of the air. *Subject Headings:* **1. Medical meteorology 2. Air conditioning 3. Atmospheric pollution.**—*M.R.*

5.2–272 551.586:61

Tichy, Hans, **Ärztliche Voraussetzungen für meteorobiologische Beobachtungen und Versuche.** [Medical assumptions for bio-meteorological observations and research.] *Germany. Deutscher Wetterdienst in der US-Zone, Berichte,* No. 42:105–107, **1952.** 23 refs. **DWB**—Essential conditions in choice of subjects for meteorobiological investigation are set out. *Subject Heading:* **1. Medical meteorology.**—*C.E.P.B.*

5.2–273 551.586:612:551.571

Buettner, Konrad J. K. (*Air Force Base, Texas*), **Diffusion von Wasser und Wasserdampf durch die menschliche Haut.** [The diffusion of water and water vapor through human skin.] *Naturwissenschaften*, 40(14):392, July **1953.** 2 refs. **DWB**—In addition to sweat, water diffuses through the skin, outwards at vapor pressure below 22 mm Hg, inwards above that figure. *Subject Headings:* **1. Skin functioning 2. Humidity effects.**—*C.E.P.B.*

5.2–274 551.586:612

Buettner, Konrad J. K., **Effects of extreme heat and cold on human skin. I. Analyses of temperature changes caused by different kinds of heat application. II. Surface temperature, pain and heat conductivity in experiments with radiant heat.** *Journal of Applied Phenology*, Wash., D. C., 3(12):691–713, June **1951.** 9+5 figs., 4 tables, 13–19 refs., 30+ eqs. **DLC**—I. Mathematical equations are developed for expressing the increase in skin temperature as a function of depth, increasing heat and time under specified conditions of heat exposure, namely: 1) non-penetrating constant heat flow in which constant radiation heat is absorbed by the surface of the skin, 2) penetrating radiant heat, 3) heat transfer between the skin and a warm ambient medium in proportion to decreasing temperature difference between the environment and skin, 4) heat transfer by contact with object of high heat capacity and conductivity, 5) skin heating through a protecting layer and 6) decrease of skin temperature after removal of the heat source. Temperature curves for the prediction of burns are developed. II. Experiments using infrared radiation were carried out in order to determine: 1) the rate at which the skin temperature rises, 2) the effect of precooling, moistening and increasing the blood flow upon the rise of skin temperature, 3) the effectiveness of heat pain as warning mechanism and 4) the time of occurrence of heat burns after the first pain sensation. The validity of the general equation for nonpenetrating constant heat flow is confirmed. *Subject Headings:* **1. Bioclimatology 2. Physiological climatology 3. Skin temperatures.**—*I.L.D.*

5.2–275 551.586:612

Burridge, William, **Climate and labour: an enquiry into the influence of climate on mental and physical work.** Allahabad, Kitabistan, **1944.** 167 p. *Lucknow University Studies.* **DLC**—A non-technical treatise on eating and living habits of men, especially fat men, in hot humid climates such as India or Burma. Some information on the skin as a heat regulator is given. Effect of altitude in the tropics is to counteract the advantage gained from cooler weather by a loss of energy and judgment ability due to decreased oxygen content of air. The latter should be compensated for in a fortnight, however. *Subject Headings:* **1. Climate and work 2. Hot humid climates 3. Environmental physiology.**—*M.R.*

5.2–276 551.586:612

Kolomiets, K. V. and SHpil'berg, G. I., **O novom metode gigienicheskoĭ otsenki klimata. (Kritieheskie zametki v sviazi so stat'eĭ prof. KH. A. Nikogosiana.)** [The new method of hygienic climate evaluation. (Critical notes on the article of Prof. KH. A. Nikogosian.)] *Gigiena i Sanitariia*, Moscow, 3:17–19, March **1953.** Reply by KH. A. Nikogosian, p. 19–21. **DLC**—The objection raised to NIKOGOSIAN's article are as follows: a denial of the fact that weather by itself can be pathogenetic; failure to utilize the method of complex climatology even though the author recommends its use; confusion of weather types with air mass characteristics; neglect of the methods of classical climatology of VOEĬKOV; overstress on nonperiodic variation of weather variables, etc. The authors stress microclimate studies parallel to physiological analysis of the effect of meteorological variables upon the entire organism, especially nervous system. *Subject Heading:* **1. Physiological climatology. I. Nikogosian, KH. A.**—*I.L.D.*

5.2–277 551.586:612:551.594

Reiter, Reinhold, **Schmerzempfindung und Wetter. Ein Nachtrag zur Arbeit von K. Brunnhölzl, F. Schiedel und H. Ungeheuer.** [Pain sensitivity and weather. Supplement to the work by. . . .] *Archiv für Meteorologie, Geophysik und Bioklimatologie, Ser. B*, 5(1):112–113, **1953.** fig., 2 refs. **MH-BH**—Author verified the effects (*ibid.*, 4:317, 1953) of infra-

long-wave disturbances by comparing interdiurnal variability of pressure sensitivity with log (mean impulse frequency per hour), obtaining close agreement. *Subject Heading:* **1. Weather sensitivity.**—*C.E.P.B.*

5.2–278 551.586:612

Robitzsch, M., **Der Akklimatisationsvorgang vom Standpunkt des Klimatologen aus gesehen.** [The process of acclimatisation seen from the standpoint of the climatologist.] *Leipzig. Universität. Wissenschaftliche Zeitschrift, Math.-Nat. Reihe,* No. 3(5):169–186, **1952/3.** Abstracted from review by H. G. Koch. **DLC**—An expression is given for rate of heat loss by human body in terms of ventilation, skin and air temperature and humidity near skin. In acclimatisation any change of equivalent air temperature θL must produce a corresponding change of equivalent body temperature θK to maintain a difference of about 25°. Curves of mean annual variation of θL are given for Leipzig and Berlin. Short period changes of θL may in suitable cases cause illness. Applications to acclimatization in health resorts are tabulated. *Subject Headings:* **1. Acclimatization. I. Koch, H. G.**—*C.E.P.B.*

5.2–279 551.586:612.275

Kérdö, István, **Összefüggések az asthmás rohamok és a levegöfajták között.** [Correlation between attacks of asthma and air-mass types.] *Időjárás,* 56(11/12):338–346, Nov./Dec. **1952.** fig., 4 tables, 18 refs., 5 eqs. Russian and German summaries p. 391–392. **DLC**—Four hundred and eighty-eight attacks of asthma observed in a patient during 188 consecutive days are correlated with accompanying air masses. In a detailed statistical study the author examines several aspects of the correlation. Although cold continental air masses appear to promote susceptibility to attacks, while modified continental air would seem to reduce it, no correlation can be established on a sufficient level of significance. *Subject Headings:* **1. Air mass effects 2. Medical meteorology 3. Asthma.**—*G.T.*

5.2–280 551.586(439.1):612.275

Tákacsy, László, **Tapasztalatok a frontátvonulások hatásáról, 3 évi boncolási anyag alapján.** [The effect of frontal passages as shown by autopsies over a period of three years.] *Időjárás,* 55(7/8):199–209, July/Aug. **1951.** table, graph, 14 refs. French and Russian summaries p. 247. **DLC**—Sudden death, in 1847 cases which occurred during the period 1948–1950, is investigated by means of an arrangement in time series in conjunction with 10,756 frontal passages. The statistical method used in testing the significance of the correlation is explained in detail. A definite correlation is found between the passage of fronts and the number of sudden deaths. There is also a pre-frontal and a post-frontal effect, the latter being more marked than the former. Cold and warm fronts are found to be equally effective. Hungarian, German and Russian literature on meteoropathology is reviewed. *Subject Headings:* **1. Frontal passage effects 2. Meteoropathology 3. Medical meteorology 4. Weather sensitivity.**—*G.T.*

5.2–281 551.586:616.936

Fisher, William B., **Quelques facteurs géographiques de la répartition de la malaria en Moyen-Orient.** [Some geographical factors in the distribution of malaria in the Middle East.] *Annales de Géographie,* 61(326):263–274, July/Aug. **1952.** 3 figs., foot refs. **DWB**—In Iraq and NE Iran temperature determines the distribution of malaria vectors; the lower limit of distribution of *A. maculipennis* coincides with the July isotherm of 29°C; at lower altitudes *A. sacharuvi* is found. It is shown that in Transjordan the number of mosquitoes captured in a district increases with increasing relative humidity indicating that low relative humidity reduces the reproduction rate of Palearctic species. *Subject Headings:* **1. Insect climatology 2. Climate and disease 3. Malaria 4. Middle East.**—*I.L.D.*

SYNOPTIC CLIMATOLOGY

5.2–282 551.589(431)

*Maede, Hans, **Tiefkern-, Vb-, zyklonale Ost- und Südlagen im Raum der südlichen Ostsee und des angrenzenden Flachlandes in Klimatologischer Betrachtung.** [A climatological analysis of the deep core-, Vb-, cyclonic east- and south situations in the area of the

south Baltic Sea and the bordering plains.] *Zeitschrift für Meteorologie*, 7(3,4):65–73; 117–123, March, April, **1953.** 3 figs., 8 tables, 11 refs. **MH-BH**—Pt. 1 contains a definition of these four weather situations which belong to a slow weather type with predominant meridional circulation, and an analysis of their annual frequency variations. They are compared with large scale weather situations of Europe. Pt. II is an analysis of the monthly and annual means of the daily maxima, minima and of the daily means of temperature, of the relative humidity, of the cloudiness and of the scalar means of wind velocity for Greifswald; these data which are given in tables are based upon observations for the period 1925–1951. The calculated values are compared with the climatological normals. It is concluded that the K-situation climate is cooler and more continental than the normal Greifswald climate; the Vb situation climate while resembling the former is characterized by a stronger NE circulation; the E-situation with its easterly circulation is continental; and the rare south-situation is marked by relatively high temperatures. Pt. III is an examination of the regional variation of these weather situations. Weather situations from the interval 1947–1950 occurring along the Mecklenburg coast of the Baltic, along the Baltic Sea and on the northwest plains are compared with respect to temperature, relative humidity and cloudiness and the data are given in tables. *Subject Headings:* **1. Grosswetterlagen 2. Synoptic climatology 3. Weather types 4. Northwest Germany.**—*I.L.D.*

5.2–283 551.589(431)

Maede, Hans, **Das Verhalten der Norwest- und Nordlagen im Raum der südlichen Ostsee und des angrenzenden Flachlandes klimatologisch betrachtet.** [Behavior of northwest and north situations in the area of the southern Baltic Sea and the bordering plains from the climatological aspect.] *Zeitschrift für Meteorologie*, 7(2):48–57, Feb. **1953.** 4 tables, 13 refs. **DWB**—Study based on surface and tropospheric weather maps for the period 1925–51. Monthly averages of temperature, humidity, cloudiness, wind speed, solar radiation and duration for Greifswald are computed for cases with northwest currents in the troposphere (frequency 7.6%) and discussed in detail, giving also temperature deviations for other parts of East Germany. A considerable influence of the Baltic Sea on weather conditions was found. *Subject Headings:* **1. Dynamic climatology 2. Synoptic climatology 3. Greifswald, Germany 4. Baltic Sea.**—*A.A.*

5.2–284 551.589.1:551.509.318

*§Hess, Paul and Brezowsky, Helmuth, **Katalog der Grosswetterlagen Europas.** [Catalog of large scale weather situations in Europe.] *Germany. Deutscher Wetterdienst in der US-Zone, Berichte*, No. 33, **1952.** 39 p. 2 tables, graphs. **DWB**—First issued in 1944 (Baur, Hess and Nogel) for year 1881–1939, and supplemented by Baur in 1947 (*see item* No. 2A–83, Jan. 1951, *MAB*), and now brought up to 1950 (70 years). The main circulation types are listed and discussed and the associated weather tabulated by years for each day during the entire period. Data are shown on graphs, emphasizing singularities. *Subject Headings:* **1. Synoptic climatology 2. Weather types 3. Singularities.**—*M.R.*

5.2–285 551.589.5:629.13

*Doege, W. and Krebs, H.-D., **Betrachtung zum Platzwetter in Neubiberg.** [Consideration of district weather in Neubiberg.] *Meteorologische Rundschau*, 6(7–8):133–135, July–Aug. **1953.** 2 tables, 7 refs. **DWB**—Value of combined statistics of visibility and ceiling at airports is illustrated by tables of annual and diurnal frequency of bad visibility and low ceiling separately and of W 1 (visibility <1 mi and/or ceiling <150–300 m). *Subject Headings:* **1. Aeronautical climatology 2. Ceiling and visibility data 3. Neubiberg, Germany.**—*C.E.P.B.*

5.2–286 551.589.5

Frisby, E. M. and Green, F. H. W., **Comparison of the regional and seasonal frequency of air masses.** *International Geographical Congress, Lisbon, 1949, Compte Rendu*, **1950.** p. 307–314. fig. Abstracted from reprint. **DLC**—General discussion for geographers. Authors mention that the IMCOS (International Meteorological Consultant Services) in London prepared a classification and a catalog of 22 weather situations for the Atlantic and

Europe based on the "Historical Weather Maps." The seasonal frequency of different air masses is shown for Southeast England, North Ireland and the Azores. *Subject Headings:* **1. Air mass frequencies 2. Synoptic climatology 3. England 4. Northern Ireland 5. Azores.** —*A.A.*

MISCELLANEOUS APPLICATIONS

COSMIC INFLUENCES

See also: **Solar variations** (Abbot), 5.2–127; **Annual precip. and solar activity** (Krivsky), 5.2–208.

5.2–287 551.590.24

Cialdea, R., **La spedizione dell'I.N.G. a Khartoum in occasione dell'eclisse totale di sole del 25/2/1952.** [Expedition of the I.N.G. to Khartoum at the time of the total eclipse of the sun on February 25, 1952.] *Annali di Geofisica*, 5(3):409–416, July **1952.** 2 figs., 16 refs. English summary p. 416. **MH-BH**—The author reports on the scientific organization of the I.N.G. Expedition sent to Khartoum to make geophysical observations during the total solar eclipse of February 25, 1952. Mentioned in particular various types of apparatus for measuring the virtual temperature of the sky, for the distribution of the state of polarization of the sky, for the electric properties of the atmosphere (potential and electric field, average spacial charge, electric conductivity) and for the terrestrial magnetism. *Subject Headings:* **1. Solar eclipses 2. Khartoum, Sudan.**—*Author's abstract.*

5.2–288 551.590.25

Ovenden, Michael W., **Recent advances in science. Astronomy. Photographic meteor research.** *Science Progress*, 41(164):635–641, Oct. **1953. DLC**—Summary of results of meteor research program of Harvard Observatory and Massachusetts Institute of Technology, mainly from astronomical viewpoint. Frequency of micrometeorites calculated as 1 per 10^7–10^8 cc. This causes excess scattering of daylight observed from high-flying aircraft, and twilight sodium D-line radiation. *Subject Headings:* **1. Meteor research 2. Micrometeorites.** —*C.E.P.B.*

VISIBILITY

5.2–289 551.591:551.576

*Huss, Ed. (*Buchau a.F.*), **Beitrag zur Kenntnis der Sicht in Wolken der freien Atmosphäre.** [Contribution to the knowledge of visibility in clouds in the free atmosphere.] *Germany. Deutscher Meteorologischer Dienst im Französischen Besatzungsgebiet, Wissenschaftliche Arbeiten*, 2:3–20, **1950.** 4 figs., 28 tables, 11 refs. French summary p. 19. **DLC**—Pilot balloon and captive balloon observations of visibility in clouds made during the period 1929–1933 are discussed. Methods of measurement are described. Data are presented on visibility in clouds and fog as a function of observation angle, cloud type and form, temperature, altitude, wind speed, gustiness, vertical temperature gradient and thermal stability, vapor pressure, water content and drop size and distribution. *Subject Headings:* **1. Visibility in clouds 2. Visibility measurement. 3. Visibility data.**—*G.T.*

5.2–290 551.591.1:551.593.53

Möller, F., **Über die Farbe der Sicht und des Tageshimmels.** [On color visibility and the color of the sky by day.] *Archiv für Meteorologie, Geophysik und Bioklimatologie, Ser. B*, 5(1):1–17, **1953.** 3 figs., 6 tables, 15 refs., 8 eqs. German, English and French summaries p. 1–2. **MH-BH**—The equivalent wave-length, color saturation and density are calculated for sun and sky radiation, separately and together, for sun 0–87° from zenith. As solar height decreases, sunlight becomes yellower, and saturation of blue sky illumination decreases. Illumination on a west wall changes from 572 mμ at 6 h to 482 at 12 h, increasing again to 591 at 18 h. The change of color of a receding object is calculated from 0–320 km, black becomes blue; changes of a white object such as a snow surface, and of gray or green objects, depend on the albedo (Table 6). *Subject Headings:* **1. Color visibility 2. Color of distant objects.**—*C.E.P.B.*

5.2–291 551.591.36(471)

*Rossi, Veikko, **Über die Sicht in Finnland.** [Visibility in Finland.] *Finland. Ilmatieteelinen Keskuslaitos, Toimituksia*, No. 35, **1952.** 32 p. 21 tables, refs. In German. **DWB**—A most thorough study of visibility conditions throughout Finland, based on observations at 10 synoptic reporting stations from 1931 to 1945. From 1911 to 1920 observations were made according to the Väisälä scale of visibility at Demala Observatory. From 1931–42 the observations were according to the scale of visibility used internationally (0–9) and reported 3 times a day at the 10 stations. From 1942–45 the German scale, differing only slightly from the international scale, was used. Conditions at each station are described in detail. Accuracy of observation is studied by comparing frequencies in different categories with frequency of haze and fog and other hydrometeors at Ilmala and Helsinki and then between stations for different periods (1931–35, 1936–40 and 1941–45). The actual data for each station then is presented by months according to 6 visibility intervals ±3 synoptic hours. Finally, the mean seasonal visibility with various weather conditions is tabulated and discussed. *Subject Headings:* **1. Visibility frequencies 2. Visibility research 3. Finland.**—*M.R.*

OPTICAL PHENOMENA

See also: **Atmos. ozone measurement, its distribution in India** (Ramanathan, Karandikar), **5.2–91; Color visibility, sky color by day** (Möller), **5.2–290.**

5.2–292 551.593.53

*†Menzl, Oswald, **Bestimmungen der Himmelsbläue mittels der Linke-Ostwaldschen Blauskala.** [Determination of the sky blueness with the Linke-Ostwald scale of blueness.] *Naturforschende Gesellschaft in Zürich, Vierteljahresschrift*, 97:186–194, **1952.** 13 tables, 5 figs., numerous refs. Abstracted from reprint. **DWB**—Author presents results of observations made from April 1934 to Aug. 1935 by means of a blueness scale with 14 degrees on the Donnersberg and in Podersdam at a distance of 51 km. Annual and diurnal variation is given, as well as dependence on cloudiness, sunshine duration, wind direction and number of nuclei. *Subject Headings:* **1. Sky light color 2. Donnersberg, Czechoslovakia.**—*A.A.*

5.2–293 551.593.55

Dózsa, László, **Egy szürkületi fényjelenség érdekességei.** [An interesting twilight phenomenon.] *Időjárás*, 56(11/12):382–385, Nov./Dec. **1952. DLC**—Popular article explaining various twilight phenomena. The article includes a description of a twilight effect observed by the author on Jan. 20, 1953. During sunset the lower part of the sky in the east was bright with light-blue luminescence, attributed by the author to reflection from the snow cover in northeastern Hungary. *Subject Headings:* **1. Twilight phenomena 2. Ice blink.**—*G.T.*

5.2–294 551.593.55:535.33

Dufay, Maurice, **Intensité de la raie $^4S-{}^2D$ de l'atome d'azote au crépuscule.** [Intensity of the $^4S-{}^2D$ band of atomic nitrogen at twilight.] *Académie des Sciences, Paris, Comptes Rendus*, 236(22):2160–2161, June 1, **1953.** refs. **DWB**—Investigation of the 5199Å forbidden line emission at twilight is reported and observation details are indicated. Comparison with the 5577Å line shows that the average 5199Å emission represents approximately $1.5 \cdot 10^7$ quanta cm^{-2} sec^{-1} vertically. This result is discussed in terms of a hypothesis of fluorescent excitation. *Subject Headings:* **1. Nitrogen lines 2. Twilight spectra.**—*Author's abstract (transl.).*

5.2–295 551.593.55 551.521.4

*Geo-Science, Inc., Washington Grove, Md., **Twilight and airglow study.** Contract AF 19(122)-433, Final Report for the period Jan. **1951**–Jan. **1953.** 44 p. 19 figs., tables. **DWB**—A summary of work done at Washington Grove, Md., and reproduction of many automatic records, graphs and tables of data from the 2 years of records of moonlight, moonless sky, twilight (evening and morning) and zenith light throughout the night. Calibration curves and methods, and other details of instrumentation are given. A seasonal variation

in zenith light was found to be independent of moon altitude, showing that zenith light intensity is twice as great in summer as in winter. Night sky light shows no correlation with magnetic K-index. Morning to evening twilight shows a ratio of 1.2 to 1 for shadow height to 90 km and 0.8 for heights above 150 km. *Subject Headings:* **1. Twilight illumination 2. Night airglow 3. Airglow investigations. I. Contract AF 19(122)-433 II. MacKenzie, Merlin H. III. Kohls, Frederick F. IV. Cronin, Harold E. V. Seaton, S. L.**—*M.R.*

5.2–296 551.593.55

Hoffmeister, C., **Atmosphärische Staubtrübung und Dämmerungs-Anomalie.** [Atmospheric dust turbidity and twilight anomaly.] *Naturwissenschaften*, 40(12):335–336, June, **1953. DWB**—Since April 1953, in 19°50′S, 17°44′E, "Ultracirrus" and intensified twilight colors were observed daily—a red segment sharply limited above, sinking in the evening and rising in morning, due to a strongly reflecting layer at 16 km. Cause possibly volcanic dust. *Subject Headings:* **1. Twilight phenomena. 2. Volcanic dust**—*C.E.P.B.*

ELECTRICAL PHENOMENA

See also: **Measurement method of radioactive substance content in air** (Haxel), 5.2–24; **Dynamic probe measurements in ionosphere** (Hok, Spencer, Dow), 5.2–95; **Pain sensitivity and weather** (Reiter), 5.2–277.

5.2–297 551.594.11:551.510.535

Chalmers, J. Alan, **The charge on the ionosphere.** *Journal of Atmospheric and Terrestrial Physics*, 3(6):345–346, July **1953.** 4 refs. **MH-BH**—Argues that total charge on inner side of ionosphere is zero, so through any closed surface above the clouds the positive downward current above fine weather is balanced by an upward current above clouds. Hence, vertical fine weather field is proportional to number of active storms. *Subject Headings:* **1. Ionosphere 2. Atmospheric potential gradient.**—*C.E.P.B.*

5.2–298 551.594.11

Uchikawa, K. (*Honjo Br., Aerol. Obs. Tateno, Japan*), **On the diurnal variation of electrical potential-gradient at Honjo branch of the Aerological Observatory.** *Tateno, Japan. Aerological Observatory, Journal*, 5(2):132–137, Jan. **1953.** 3 figs., table, refs. In Japanese, English summary p. 132. **DWB**—The potential gradient and the space charge have been recorded at Honjo Branch of the Aerological Observatory, Saitama-Prefecture since August 1950. Both potential-gradient and space-charge have four types of diurnal variation in relation to the weather conditions (low cloud, precipitation and wind velocity). Diurnal variation shows large amplitude when the wind velocity is less than 3m/s on cloudless days, and small amplitude when the wind velocity is larger than 4m/s. The diurnal variations of potential-gradient are also influenced by wind direction. Relations between potential-gradient and space-charge are considered theoretically and it is concluded that space charge at several ten meters above the ground greatly affects the potential gradient near the ground. *Subject Headings:* **1. Potential gradient variations 2. Potential gradient measurement.**—*From author's abstract.*

5.2–299 551.594.12

Chalmers, J. Alan, **The effective separation of discharging points.** *Journal of Atmospheric and Terrestrial Physics*, 3(6):346–347, July **1953.** 5 refs. **MH-BH**—By a new method, the effective separation *d* at Kew is calculated as 11 m. *Subject Heading:* **1. Electrical charges.**—*C.E.P.B.*

5.2–300 551.594.12(485)

Siksna, Reinhards, **Measurements of large ions in the atmospheric air at Uppsala.** *Arkiv för Geofysik*, Stockholm, 1(18):483–518, **1953.** 33 figs., 6 tables, refs. p. 517–518. **DLC**—Theoretical basis for the determination of the spectral composition of large ions developed in detail. Approximate prediction of large ions possible if contents of small ions and weather conditions are known. General survey of ion spectra presented. Measurements were made

by an Israël large-ion counter. One of the few disadvantages of this apparatus is the electrical field disturbance at the ends of the cylinder condenser, the so-called end-effect. Small ions were measured simultaneously by an Ebert counter. Results of measurements given (weather conditions, number of large, ultralarge, Langevin large, small, intermediate ions, as well as number of positive and negative small ions). Content of ions very variable. *Subject Headings:* **1. Ion content 2. Ion spectra 3. Ion counters 4. Uppsala, Sweden.**—*A.A.*

5.2–301 551.594.13:551.584.61

Schilling, Gerhard F. and Carson, Joan, **On the electrical conductivity of air inside buildings.** *California. University at Los Angeles. Institute of Geophysics, Publ.* No. 25. Also published in *Archiv für Meteorologie, Geophysik und Bioklimatologie, Ser. B*, 5(1):52–58, **1953.** fig., 20 refs. English, German and French summaries, p. 52–53. **MH-BH**—Measurements of conductivity were made in a residential part of Los Angeles, with two identical Gerdien tubes recording direct current continuously, one in an office room (windows closed) and one on the flat roof above. The results, inside and outside, were similar. Occupancy of the room had little effect. *Subject Headings:* **1. Electrical conductivity of air 2. Indoor climates.**—*C.E.P.B.*

5.2–302 551.594.14:539

Haxel, O. and Schumann, G., **Über die radioaktive Verseuchung der Atmosphäre.** [On the radioactive contamination of the atmosphere.] *Naturwissenschaften*, 40(17):458–459, Sept. **1953.** 2 figs., refs. **DWB**—Continuous records of radioactivity at Königsstuhl near Heidelberg since March 1953 show long-lived activity which is attributed to end products of atom bomb explosions. The Las Vegas explosion of May 8 appeared as a sudden increase of activity on May 14 to 2.5×10^{-12} Curie/m^3. *Subject Headings:* **1. Radioactivity in the atmosphere 2. Atomic explosions.**—*C.E.P.B.*

5.2–303 551.594.14

Rose, D. C. and Katzman, J., **Radioactive deposits at Ottawa after the atomic explosions of January and February 1951.** *Canadian Journal of Physics*, 30(2):111–116, March **1952.** 4 figs., 5 refs. **DWB**—At about 1000 G.M.T. on Jan. 29 and about 0800 G.M.T. on Feb. 7, 1951 the fall of a considerable amount of radioactive matter was recorded by various arrangements of Geiger-Mueller counters which were in continuous operation on the roof of the cosmic ray observatory of the National Research Council of Canada at Ottawa. Light snow was falling on both occasions (changing into rain on Feb. 7), but it is uncertain whether this had any bearing on the deposit of radioactive material. The material was found to be dust distributed over the snow cover. The quantity was roughly estimated to be of the order of one microgram radium equivalent per square meter. Measurement of decay rate was made on samples of melted snow and indicated that the radioactivity recorded on the above dates was probably due to products of fission originating in atomic explosions in Nevada on Jan. 27, and between Feb. 2 and Feb. 4, respectively. Decay curves are presented and the arrangement of the counter trays shown in a diagram. *Subject Headings:* **1. Radioactive dust 2. Atomic explosions 3. Ottawa, Canada.**—*G.T.*

5.2–304 551.594.223

Petersen, Helge, **Ball lightning.** *Geophysica*, Helsinki, 5(1):49–50, **1952.** photo. **DWB**—An unusual picture of the erratic motion of a lightning ball, estimated to be about 5 cm in diameter, which crossed the field of view of a camera set to record a lightning stroke in Copenhagen. The ball was said to move slowly and to have finally been caught in the downdraft of a cold chimney and to have exploded in the fireplace. Unfortunately, the data and circumstances were not recorded immediately. *Subject Headings:* **1. Ball lightning 2. Copenhagen, Denmark.**—*M.R.*

5.2–305 551.594.25:551.577.36

Best, A. C., **The relation between rain current and rate of rainfall.** *Journal of Atmospheric and Terrestrial Physics*, 3(6):285–288, July **1953.** fig., table, 3 refs., 12 eqs. **MH-BH**—From the formulas for size distribution of raindrop diameter x and terminal velocities of fall,

a formula for rate of rainfall R' is derived. Assuming that each drop carries a charge Kx^2 where $K=-3X/400$ (X=electric fields in e.s.u.) rain current i is given by $C(R')^n$. The observations are best represented by i/I proportional to $(R')^{0.73}$ where I is point-discharge current. "The non-linearity of the relation between rain current and rate of rainfall is adequately explained by the drop-size distribution in rain." *Subject Heading:* **1. Electricity of precipitation.**—*C.E.P.B.*

5.2–306 551.594.25

Gunn, Ross and Devin, Charles, Jr., **Raindrop charge and electric field in active thunderstorms.** *Journal of Meteorology*, 10(4):279–284, Aug. **1953.** 13 figs., table, 6 refs. **MH-BH**—Simultaneous surface measurements were made, during two active spring thunderstorms in Washington, of free charge on >7000 drops, precipitation range and local field. Diagrams show no significant correlation of droplet charge with electric field. Average charge per drop +0.022 e.s.u., −0.031; total negative charge 1.2 times positive charge. Current per unit area brought down by rain often greatly exceeds that brought by electric conduction, so that charged rain may determine surface field instead of *vice versa*. *Subject Heading:* **1. Electricity of precipitation.**—*C.E.P.B.*

PART II. SELECTIVE ANNOTATED BIBLIOGRAPHY ON THE CLIMATE OF SOUTHEAST ASIA AND THE EAST INDIES

By: *Harris P. Kramer* and *Katherine Martinoff*

The region covered by this bibliography includes Asia south of the Tropic of Cancer and east of Bengal, including studies on Hong Kong and South China wherever they are of general interest for the tropical regions of Asia or the East Indies. The Philippine Islands are included with the East Indies since they are climatically and geographically part of that area. Formosa has not been included, nor has Ceylon.

The abstracts themselves have been arranged simply according to the date of publication of the original article, or in the case of serials according to the last date of publication (if not currently issued) or according to the first date of publication if they are still being published.

Subsequent bibliographies will cover India, Pakistan, Bengal and Ceylon, on the one hand, and Japan, the Ryukyus and Formosa, on the other.

Obviously this bibliography does not cover the entire literature on this area. Many items have been eliminated because of lack of space, and many more have not been located because of lack of time. However, it is hoped that this will provide a representative cross section of material published from 1872 to 1953 on the meteorology and climatology of this area, and will serve as a starting point for anyone wishing to make an exhaustive bibliography on the area or any portion thereof. Naturally sources of data and further bibliographic references have been given preference over material of purely descriptive nature.

For further references to material on adjacent areas please refer to our bibliographies on: **Climate of Australia and New Zealand** (Vol. 4, No. 4, April 1953) and **Climatology of the Pacific** (Vol. 4, No. 9, Sept. 1953).

The following Geographic Outline is arranged, as can be seen, according to two distinct areas: (1) Southeast Asia (including South China and Indochina) and (2) the Malay Archipelago; contiguous areas and adjoining seas constitute a separate section. The same scheme has been followed in the Subject Outline, under the specific Subject Headings.

The subject matter has been arranged according to the following general Outline which is approximately the same as that used in our Current Abstracts.

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5B–1 551.506.1

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1884

5B–2 551.506.1

Hong Kong. Royal Observatory, **Meteorological Results. Pt. I, Surface Observations. Pt. II, Upper Air Observations.** This title began as *Observations made at the Hong Kong Observatory*, **1884–1903** and continued as its *Meteorological Observations*, **1904–1912.** Both the *Meteorological Observations*, and its *China Coast Meteorological Register*, **1894–1912,** were superseded by its *Monthly Meteorological Bulletin*, **1913–1932.** It then was published as *Meteorological Results*, **1933–1939;** publication suspended after 1939, and was resumed under same title in **1947–. DWB, DLC**—Official annual publication of the observatory includes notes on and tables of observational data of all the usual elements for each year, including upper air observations since 1947. Typhoon tracks for each year are charted. The *Monthly Met. Bulletin* includes daily observational data from Hong Kong and daily weather reports from various stations in the Far East. "Observations made at the Hong Kong Observatory" and "China Coast Met. Register" are, respectively, publications of daily observational data from the Hong Kong Observatory and from various stations along the eastern Asiatic coast from Vladivostock to Cebu and Labuan, North Borneo. Further source of summarized climatic observations is to be found in the section Meteorological observations of the "Annual Report of the Colonial Government" (1910–1939 and 1947–), reprinted and distributed by the Meteorological Office in London. (*See also* 4E–69, May 1953, *MAB.*) *Subject Headings:* **1. Annual meteorological reports 2. Climatic data 3. Upper air data 4. Hong Kong 5. Far East 6. South East Asia.**

5B–3 551.582

***Klima von Cochinchina.** [Climate of Cochin China.] *Österreichische Gesellschaft für Meteorologie, Zeitschrift*, 19:186–190, **1884.** tables. Note in: *Meteorologische Zeitschrift*, 3:143, **1886.**

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1885

5B–4 551.506.1(595)

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1886

5B–5 551.582(922)

*Liznar, Josef, **Das Klima von Batavia nach Dr. Van der Stok's "Observations made at Batavia," Vol. VI.** [The climate of Batavia after Dr. Van der Stok's . . .] *Meteorologische Zeitschrift,* 3:145–153, April **1886.** 10 tables. **NN**—Observations of the usual climatic elements, 1866–1882, are summarized in tables (from original data by van der Stok . . . unchecked) and discussed. *Subject Headings:* **1. Climatic data 2. Urban climates 3. Batavia, Java. I. Van der Stock, —.**

1887

5B–6 551.552(910):551.465

*Blink, H., **Wind- und Meeresströmungen im Gebiet der kleinen Sundainseln.** [Wind- and ocean currents in the region of the Lesser Sunda Islands.] *Beiträge zur Geophysik,* 1:1–58, **1887.** 6 tables, refs. **NN**—Conditions of wind and ocean currents in the sea regions of the Lesser Sundas are discussed, and fragmentary records from numerous ships' logs going back as far as 1837 are tabulated by months and by particular sections of the region. *Subject Headings:* **1. Winds 2. Ocean currents 3. Lesser Sunda Islands, Indonesia.**

5B–7 551.553.21 551.552(267)

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1889

5B–8 551.582

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1899

5B–9 551.585.7(922)

*Kohlbrugge, J. H. F., **Meteorologische Beobachtungen zu Tosari (Java). Ein Beitrag zur Kenntniss des Höhenklimas tropischer Inseln.** [Meteorological observations at Tosari, Java. A contribution to the knowledge of high altitude climates of tropical islands.] *Meteorologische Zeitschrift,* 16:5–12; 63–76, **1899.** 6 figs., tables, refs. See also his similar work in Dutch in: *Natuurkundig Tijdschrift voor Nederlandsch-Indië,* 58:400–455, **1899.** Also: Kohlbrugge, J. H. F. and van Gennep's other works on mountain climate in Java. *Ibid.,* 58:367–399, **1899**; 59:254–297, **1900. NN**—A detailed study of the climate (and particularly of the medical aspects) of this mountainous region (1777 m) of Java is made from the author's personal observations and records, 1893–1897. Tables give summarized data of usual elements. *Subject Headings:* **1. Mountain climates 2. Medical climatology 3. Tropical climatology 4. Java. I. van Gennep, J. L.**

1900

5B–10 551.506.1(51)

*Hong Kong. Royal Observatory, **Annual Report, 1900–** (suspended 1940–1946). Latest issue received, 1950/1951, by G. S. Heywood, Director. 23 p. 8 tables. **DLC**—Routine summary of unusual weather during year, condensed table of monthly and annual means of the usual weather elements, statistics on radiosonde observations and description of various activities of the station and its relationships with other agencies. *Subject Headings:* **1. Annual meteorological reports 2. Hong Kong. I. Heywood, G. S.** (*Dir.*).—*M.R.*

5B–11 551.582(95)

von Danckelman, A., **Klima von Neu-Guinea.** [Climate of New Guinea.] *Meteorologische Zeitschrift*, 17:157–164, **1900.** **DWB**—Characteristics of New Guinea climate, influences upon it, etc., are discussed along with some summary tables of climatological means at various points on the island in both British and German sectors for varying periods of year 1886–1898. See also: *Ibid.*, 12:193–194, 1895, for other climatic notes on New Guinea. *Subject Headings:* **1. Climate of New Guinea 2. New Guinea.**

1901

5B–12 551.582.2(914) 551.501

***Normals for Manila.** And: **The new Philippine Weather Service.** *Monthly Weather Review*, 29:119–120; 372–374, **1901.** 5 tables. **NN**—Monthly and annual climatic normals from Manila Observatory are briefly reproduced: temperature and humidity data for 1883–1898, and rainfall for 1865–1898. History and recent progress of the Philippine Weather Service is described briefly. The legal U. S. act providing for the establishment of this Weather Bureau is printed, with no editorial comment. *Subject Headings:* **1. Climatic normals 2. Meteorological services 3. Philippine Meteorological Service 4. Manila, Philippine Islands.**

5B–13 551.506.1(914)

*Philippines. Weather Bureau, **Annual report . . . 1901–.** Extensive tables. Title varies slightly. **DWB**—Contained in the three sections of the *Annual Report* are summaries of work of the Weather Bureau for each year, hourly meteorological observations made at the Observatory, Manila, some magnetic observations, and daily meteorological observations from secondary stations throughout the Philippines. *Subject Headings:* **1. Observational data 2. Annual meteorological reports 3. Manila, Philippine Islands 4. Philippine Islands.**

1902

5B–14 551.582(914)

*Algué, José, **The climate of Baguio.** *Philippines. Weather Bureau, Annual Report*, Pt. 1, **1901/1902.** 74 p. 34 plates, 65 tables. **NNA.** Summary of data by J. Hann in: *Meteorologische Zeitschrift*, 21:93–95, **1904.** **DWB**—Detailed report and analysis of first year's climatological observations at Baguio. The usual elements are taken up individually, and, finally, a brief comparison of the climate of Baguio with that of other tropical stations at similar altitudes is made. *Subject Headings:* **1. Climate of Baguio 2. Climatic data 3. Baguio, Philippine Islands. I. Hann, Julius.**

5B–15 551.525.2(914)

*Algué, José, **Ground temperature observations at Manila, 1896–1902.** Manila, 1902. 16 p. 2 plates, 9 tables. **DWB**—Regular soil temperature observations during this period are tabulated at some length and discussed. *Subject Headings:* **1. Soil temperature data 2. Manila, Philippine Islands.**

1904

5B–16 551.582(914)

*Algué, José, **The climate of the Philippines.** *U. S. Census Bureau, Census of the Philippine Islands, Bulletin*, No. 2, **1904.** 103 p. maps (fold.), 27 plates, 51 tables, refs. **NN**—Scientific account of the climate and storms of the Philippines. Includes consideration of geographical conditions, the usual climatic elements, surface winds, upper winds as determined by high cloud direction and general atmospheric circulation, depressions, cyclones, thunderstorms, etc. *Subject Headings:* **1. Climate of Philippine Islands 2. Climatic data 3. Philippine Islands.**

1906

5B–17 551.582(596)

Chauveau, A. B., **Sur le climat de la région de Hué.** [On the climate of the Hué region.] *Société Météorologique de France, Annuaire*, 54:168–175, **1906.** tables. **NN**—Brief summary of

climate of Hué, on the coast of Annam, Indochina, using means kept by various observers for periods between 1881 and 1905. *Subject Headings:* **1. Climate of Hué 2. Hué, French Indochina.**

5B–18 551.586:612(593)

Highet, H. Campbell, **Climate and health in Bangkok.** *Siam Society, Bangkok, Journal*, v. 3, **1906.** 20 p. 2 fold. charts, tables. **DLC**—Description of climate with a summary table of values referring to 10 year records and advice to visitors regarding food, clothing, disease, etc. *Subject Headings:* **1. Urban climates 2. Medical climatology 3. Climate and man 4. Bangkok, Thailand.**

1907

5B–19 551.582(596)

Chauveau, A. B., **Sur le climat de Hanoi.** [On the climate of Hanoi.] *Société Météorologique de France, Annuaire*, 55:165–175, **1907.** tables, refs. **NN, DLC**—Using observational data from several sources, author describes the principal climatic elements of Hanoi, illustrating them with brief summary tables. *Subject Headings:* **1. Climate of Hanoi 2. Hanoi, French Indochina.**

5B–20 551.552

*Eliot, John, **A discussion of the anemographic observations recorded at Rangoon from June 1878 to October 1901.** *India. Meteorological Dept., Memoirs*, 18, Pt. 1:1–66, **1907.** 14 plates, 6 tables. **DWB**—The more important features of air movement in this region are discussed as part of a series to include several stations of the Indian area. A continuous anemographic record, May 12, 1878–Oct. 31, 1901, is analyzed, and numerous tables, graphs, wind roses, etc. are constructed. Notes on various climatic conditions are included. *Subject Headings:* **1. Winds 2. Wind data 3. Rangoon, Burma.**

5B–21 551.506.1(05)(596)

*French Indochina. Service Météorologique. **Bulletin Mensuel des Observations.** Jan. **1907,** Jan. 1909, 1927–1930, 1937–1938–. Title varies. **DWB.** 1937–1939, called: *Observations Météorologiques*. **NNA**—Monthly means of climatic observations from first order and rainfall stations of Indochina are tabulated in monthly bulletins. Early issues contain values for several stations in Siam also. In later issues observations are more extensive and include values for surface and upper winds, nebulosity, visibility as well as the usual elements. *Subject Headings:* **1. Climatic data 2. Monthly data bulletins 3. Upper air wind data 4. French Indochina 5. Thailand.**

5B–22 551.582(922)

Klima von Buitenzorg. [Climate of Buitenzorg.] *Meteorologische Zeitschrift*, 24:124–129, **1907.** 2 tables, refs. **NN**—Climatic characteristics are summarized in small tables using observations of the Buitenzorg Botanical Institute mostly for 1902 and 1903; some climate comparisons are made with Batavia. Earth temperature values at 30, 60, 90 cm depths are included with monthly averages for other climatic elements, 1902, 1903. *Subject Headings:* **1. Climate of Buitenzorg 2. Soil temperatures 3. Buitenzorg, Java.**

1908

5B–23 551.524.2

***De temperatuur te Pasoeroean volgens de opteekeningen van den thermograaf aan het Proefstation "Oest Java" in de jaren 1901–1904.** [The temperature at Pasoeroean from thermograph records at the East Java experiment station 1901–1904.] *Natuurkundig Tijdschrift voor Nederlandsch-Indië*, Djakarta, 67:49–53, **1908.** table. **NN**—Two-hourly temperature records for these four years are summarized. Means, maxima, etc. are tabulated. *Subject Headings:* **1. Temperature data 2. Pasoeroean, Java.**

5B–24 551.506.5(95)

***Meteorologische waarremingen te Merauke en te Kiroeroe (Etna-baai) verricht gedurende de Nieuw-Guinea-expeditie van 1904–1905.** [Meteorological observations at Merauke and at Kiroeroe made during the New Guinea expeditions 1904–1905.] *Natuurkundig Tijdschrift voor Nederlandsch-Indië*, Djakarta, 67:36–48, **1908.** tables. **NNM**—Observations of usual climatic elements made on this expedition are briefly discussed; temperature and pressure values are tabulated. *Subject Headings:* **1. Expeditionary climatic data 2. New Guinea.**

5B–25 551.577.2(593)

***Rainfall records of the Kingdom of Siam.** *Siam Society, Bangkok, Journal*, 4(2):47–106, **1908.** extensive tables. Extract **DWB**—Organized tables of rainfall 1904–1907. *Subject Headings:* **1. Precipitation data 2. Thailand.**

5B–26 551.577

*Smits, P. Joh., **Regenwaarschijnlijkheid in de zeeën van den Nederlandsch-Indischen Archipel.** [Rainfall probability in the seas of the Netherlands Indian Archipelago.] *Natuurkundig Tijdschrift voor Nederlandsch-Indië*, Djakarta, 67:89–119, **1908.** map, 6 tables, refs. **NNM**—From study of observations made mostly aboard Dutch ships, 1887–1902, in the seas around the Netherlands Indies, monthly rainfall averages, frequencies, numbers of rainy days, etc. are tabulated, and probabilities are calculated for 41 parts of the sea region. *Subject Headings:* **1. Precipitation at sea 2. Rainfall probability 3. Indonesian Seas.**

1909

5B–27 551.577

*Aufray, —, **Richesse des eaux de pluie en acide azotique et en ammonique au Tonkin.** [Amount of nitric acid and ammonia in the rainfall of Tonkin.] *French Indochina. Service de la Statistique Générale. Bulletin Économique de l'Indochine*, 12(81):595–616, **1909.** tables. **NN**—As well as giving quantity of nitric acid and of ammonia found in the rainfall, the rainfall amount in mm and duration in hours on each recorded rain day are given, and some notes as to rainfall intensities in thunderstorms, typhoons, etc. Work consists mainly of tables with some discussion of chemical content of rain as observed, 1902–1909. *Subject Headings:* **1. Rain composition 2. Rain intensities 3. Precipitation data 4. Tonkin, French Indochina.**

5B–28 551.582(593)

Gerbing, Walter, **Das Klima von Siam und die Ergebnisse der von Dr. Hosseus angestellten meteorologischen Beobachtungen.** [The climate of Siam and the results of meteorological observations made by Dr. Hosseus.] *Petermanns Geographische Mitteilungen*, 55:128–133, **1909.** tables, 6 refs. **NNA**—General climate of Siam and meteorological conditions that cause it are discussed. Seven months', Dec.–June, observations of the usual elements made at Djeng Mai are summarized; 4 years' monthly rainfall totals and days of rain, 1901–1904, at Bangkok are tabulated; and temperature conditions on the summit of Doi Sutep (1675 m) are briefly discussed. *Subject Headings:* **1. Climate of Thailand 2. Precipitation 3. Temperature 4. Thailand.**

5B–29 551.582(912)

*Smits, P. Joh., **Het Klimat der Hoogvlakte von Tondano.** [The climate of the plateau of Tondano.] *Natuurkundig Tijdschrift voor Nederlandsch-Indië*, Djakarta, 68:18–109, **1909.** 34 tables, 2 refs. **NNM.** Review in: *Meteorologische Zeitschrift*, 26:524–525, **1909. DWB**—Complete and detailed summary is made of climatic observations of all usual elements kept at Tondano, Celebes, 1895–1907. *Subject Headings:* **1. Urban climates 2. Climatic data 3. Tondano, Celebes.**

5B–30 551.582.2(591)

*Warth, Frederick J., **Climatological tables for Burma, compiled from Climatological Tables for India.** *Burma. Dept. of Agriculture, Bulletin*, No. 2, **1909.** Burma, 1949. 20 p. entirely tables. **DLC**—Data for 14 stations in Burma include monthly and annual mean and extreme temperatures, pressure, wind, rainfall, cloud, vapor pressure and relative humidity. *Subject Headings:* **1. Climatic data 2. Burma.**—*M.R.*

1911

5B–31 551.582(596)

*Le Cadet, G., **Le climat du Delta du Tonkin.** [Climate of the delta of Tonkin.] *French Indochina. Service de la Statistique Générale. Bulletin Économique de l'Indochine*, 14:757–776, **1911.** tables. **NN.** Summary and analysis by J. Hann in: *Meteorologische Zeitschrift*, 29:125–128, **1912. DWB**—Author presents a thorough summary of the principal results of meteorological observations, 1907–1910, at Tonkin. The various climatic elements are taken up individually, and the data are tabulated. *Subject Headings:* **1. Climate of Tonkin 2. Climatic data 3. Tonkin, French Indochina. I. Hann, J.**

5B–32 551.582.2(910)

*Indonesia. (K.) Magnetisch en Meteorologisch Observatorium te Batavia, **Observations made at secondary stations in the Netherlands Indies . . .** v. 1–25–, 1911–1943–. Title varies slightly. **NN**—Publication was suspended with Vol. 8 (1918) and resumed with Vol .9 (1927). Observations covering the period 1919–1926 were later issued as Vol. 8A and 8B. Extensive summary tables are published in Vols. 19A and 19B, 1940. This annual periodical consists entirely of tables with explanatory introduction. Tables give values at different stations for: air pressure, temperature, relative humidity, sunshine, rainfall, winds—frequency and velocity, evaporation, cloudiness, and diurnal distribution of thunderstorms. Early volumes give only monthly means, but later volumes

give two and three hourly values of the usual elements. No upper air data included. *Subject Headings:* **1. Climatic data 2. Annual meteorological reports 3. Indonesia.**

1912

5B–33 551.506.7(910, 922)

*Braak, Cornelius, **I. Drachen- und Fesselballon-beobachtungen. II. Wissenschaftliche Ergebnisse der Aufstiege mit dem Freiballone "Batavia."** [I. Kite and captive balloon observations. II. Scientific results of the ascents of the free balloon "Batavia."] *Indonesia.* (*K.*) *Magnetisch en Meteorologisch Observatorium te Batavia, Verhandelingen* No. 2, **1912.** 46 p. graph, tables. **NN**—Results of kite and balloon ascents at Batavia, Nov. 1909–Sept. 1910, and of kite observations over the South China Sea, Jan. 14–19, 1910, are tabulated and discussed; temperature, humidity, and winds are considered. The second part of paper reports briefly the scientific results of the ascents of the free balloon "Batavia" in 1910–1911. Graph shows mean temperatures at heights up to 300 ft at Batavia and on the coast of Java during east and west monsoons. *Subject Headings:* **1. Upper air data 2. Batavia, Java 3. South China Sea.**

5B–34 551.577.38(914)

Coronas, José, **The extraordinary drought in the Philippines Oct. 1911, to May 1912.** Manila, **1912.** 19 p. 4 tables. In English and Spanish. **NNA**—This very severe drought is studied first with regard to Manila and then as it affected other regions of the Philippines. Rainfall statistics for 47 years (since the founding of the Manila Observatory) are examined; comparisons are made between the rainfall of the 8 months under consideration and corresponding periods in other years. *Subject Headings:* **1. Drought 2. Philippine Islands.**

5B–35 551.582(593)

*Highet, H. Campbell, **The climate of Bangkok.** Bangkok, H. E. Minister of Local Government, **1912.** 38 p. 5 charts, 17 tables. Also in: *Siam Society, Journal,* 9(2), **1912. GB-MO, DLC**—Tables and notes based on daily records 1902—11 with descriptions of monsoon and weather month by month and comparison with records 1858–68. Gives mean and extreme temperatures and rainfalls, raindays, black bulb temperatures and means of relative humidity. Charts include a few diurnal temperature curves. (*Same item as* 3G–31, July 1952, *MAB.*) *Subject Headings:* **1. Urban climates 2. Climatic data 3. Bangkok, Thailand.**—*C.E.P.B.*

5B–36 551.582(95)

*Marquardsen, H., **Bericht über das meteorologische Beobachtungswesen im Schutzgebiet Deutsch-Neuguinea im Jahre 1911.** [Report on the meteorological observation network in the colony of German New Guinea in 1911.] *Mitteilungen aus den Deutschen Schutzgebieten,* Berlin, 25:332–337, **1912.** 2 tables. **DLC, NN**—Rainfall amounts and numbers of days by months in 1911 are tabulated for 20 stations in Kaiser-Wilhelmsland and for 42 stations in Bismarck Archipelago, Solomons, and German Micronesia. *Subject Headings:* **1. Rainfall data 2. New Guinea 3. Bismarck Archipelago 4. Solomon Islands 5. Micronesia.**

5B–37 551.557

van Bemmelen, W., **Die Windverhältnisse in den oberen Luftschichten nach Ballonvisierungen zu Batavia.** [Upper air wind conditions according to pilot balloon observations in Batavia.] *Indonesia.* (*K.*) *Magnetisch en Meteorologisch Observatorium te Batavia, Verhandelingen,* No. 1, **1911.** Also: Perlewitz, P., **Die Windverhältnisse. . . .** *Annalen der Hydrographie und Maritimen Meteorologie,* 40(4):181–187, April **1912.** 7 tables. **DWB**—1) Results of 338 pibal ascents in Batavia, 1909–1911. 2) Author tabulates van Bemmelen's pilot balloon data to show seasonal wind variation with height up to about 15 km. *Subject Headings:* **1. Wind profiles 2. Upper air winds 3. Batavia, Java. I. Perlewitz, P.**

1913

5B–38 551.515.1:551.582(596)

*§Chassigneux, E., **Les dépressions continentales et le climat du Tonkin.** [Continental depressions and climate of Tonkin.] *Revue de Géographie* (*Annuelle*), Paris, 7(2):1–135, **1913.** 17 figs., tables, refs. (Abstracted from reprint.) **DWB**—Detailed treatment of the continental depressions as they affect the climate of Tonkin in the cool and warm seasons. Seasonal meteorological conditions at Tonkin are described; particular instances of continental depressions over China in 1910–1911 are studied and synoptic charts given; effects of these depressions on Hanoi in particular are considered. Continental depressions of summer are taken up separately. *Subject Headings:* **1. Climate of Tonkin 2. Depressions 3. Tonkin, French Indochina.**

1914

5B–39 551.509.33:551.553.21(910)

Braak, Cornelius, **Een moessonvoorspelling voor den Indischen Archipel.** [Monsoon forecasting for the Indian Archipelago.] *Natuurkundig Tijdschrift voor Nederlandsch-Indië*, 73:69–83, **1914.** graph (fold.). **NNM**—One-day, several-day, and principally long-range weather forecasting are discussed. In regards to the last, pressure and temperature cycles, correlations, periodicities, etc. are considered. *Subject Headings:* **1. Long range forecasting 2. Monsoon forecasting 3. Indonesia.**

5B–40 551.543.1

Galán, Antonio, **The harmonic formula of Fourier and Bessel and its application to the study of the diurnal variation of the atmospheric pressure in Manila during the period 1890–1909.** Manila, **1914.** 71 p. 13 plates, 6 tables, refs., numerous eqs. Spanish trans. **NNA**—Theoretical work. *Subject Headings:* **1. Pressure variations 2. Harmonic analysis 3. Manila, Philippine Islands.**

5B–41 551.582.3(267)

*Netherlands. (K.) Meteorologisch Insituut, **Oceanographische en meteorologische waarnemingen in den Indischen Oceaan.** [Oceanographic and meteorological observations in the Indian Ocean.] Its [Publication], No. 104 (latest imprint dated **1914**). Work appears in four quarterly atlases, charts only, with data under separate cover. **DLC, NNA**—Parts of the Indonesian Seas are included. Observations of sea currents and temperatures, winds and other meteorological elements used in making the charts were kept during more than half a century by Dutch ships in region, all mean values for one-degree squares have been tabulated, so as to be "useful for scientific purposes." Contents include charts on sea currents, wind, air and sea circulation, isobars, isotherms of air and sea, cyclones and fogs. No text. Quarterly volumes are as follows: Dec.–Feb., 1856–1910 (26 charts; reviewed in *American Geographical Society, Bulletin*, 47:616, 1915); March–May, 1856–1912 (25 charts); June–Aug. 1856–1914, available at **DLC**. *Subject Headings:* **1. Oceanographic data 2. Marine atlases 3. Marine climatic data 4. Indian Ocean 5. Indonesian Seas.**

5B–42 551.577.2(914)

*Saderra Maso, Miguel, **Annual amount and distribution of rainfall in the Philippines.** Manila, **1914.** 42 p. map, numerous tables, refs. Trans. into Spanish. **NNA**—Rainfall records for various regions of the Philippines for varying numbers of years between 1902 and 1913 are summarized in tables and discussed. Amount, annual distribution, monthly and annual averages and records of rainfall, and of rainy seasons and their characteristics are considered. *Subject Headings:* **1. Rainfall distribution 2. Rainfall data 3. Philippine Islands.**

1915

5B–43 551.582(914)

Algué, José, **Climate of the Philippines.** Manila, **1915.** 25 p. 6 figs., 3 tables. **NN**—General article in which three types of climate found in the Philippines are discussed and their distribution shown on map. General characteristics of each are noted; graphs of the usual elements in each drawn; and monthly and annual rainfall averages for several stations in each region are tabulated. Cyclone (typhoon) frequency in each region, noted. *Subject Headings:* **1. Climate of the Philippine Islands 2. Philippine Islands.**

5B–44 551.506.7(922)

*Braak, Cornelius, **Drachen-, Freiballon- und Fesselballon-Beobachtungen.** [Kite, free, and captive balloon observations.] *Indonesia. (K.) Magnetisch en Meteorologisch Observatorium te Batavia, Verhandelingen*, No. 3, **1915.** 58 p. 2 figs., numerous tables, refs. **NNA**—Detailed discussion of some observations between 1912–1914 made on different balloon and kite ascents at different times of year, and of results. Some of results surveyed are: the inversion and the strength of land winds; anomalies of temperature and humidity in the Australian winter anticyclones; the origin of temperature and humidity anomalies; daily temperature variations; a disturbance in nighttime temperature conditions. *Subject Headings:* **1. Upper air data 2. Java.**

5B–45 551.577.2(910)

Braak, Cornelius, **De regenverdeelingen in den Oost-Indischen Archipel.** [Rainfall distribution in the East Indian Archipelago.] *Natuurkundig Tijdschrift voor Nederlandsch-Indië*, 74:57–66, **1915.** tables. **NNM**—Four aspects of rainfall in the East Indies are considered: the condensation processes as they occur in the tropical rain belt; the influence of the continents of Asia and Australia and the monsoons; the rotation of the earth; and local influences. Some representative data are briefly tabulated. *Subject Headings:* **1. Precipitation distribution 2. Indonesia.**

1917

5B–46 551.577.2(910)

*Boerema, J., **Merkwaardige regenval in Nederlandsch-Indië in Januari 1916 en regenperiodes te Batavia ge durende het tijdvak 1864–1916.** [Remarkable rainfall in Netherlands Indies in Jan. 1916 and rainy spells at Batavia during the period 1864–1916.] *Natuurkundig Tijdschrift voor Nederlandsch-Indië*, 76:31–40, **1917.** tables, ref. Also: **[Rainfall in the east monsoon months and the extent of the region of no rainfall during the drying east monsoon in the Netherlands Indies.]** *Ibid.*, p. 47–63. **NNM**—Description given of this rainy period along with summarized rainfall data for 1864–1916 for numerous stations in the Indies. *Subject Headings:* **1. Rainfall data 2. Monsoon rains 3. Indonesia.**

5B–47 551.577.2(596)

*Le Cadet, G., **Régime pluviométrique de l'Indochine.** [Rainfall regime of Indochina.] *French Indochina. Service de la Statistique Générale, Bulletin Économique de l'Indochine*, 20(123):1–50, Jan./April **1917.** charts (fold.), tables, refs. **NNA, DLC**—Using data from the rainfall bulletins of the (Indochina) Central Observatory (Hanoi), 1906–1915, author calculates means for all available stations, constructs rainfall charts and in general makes as thorough a summary, practical and theoretical, of the precipitation regime of Indochina as he can up to that time, including distribution, frequency, maxima, minima and averages, as well as occurrence of snow, hail, thunderstorms, fog, mist, "crachin." Some mean monthly values, 1907–1915, of all usual climatic elements are summarized in tables. *Subject Headings:* **1. Rainfall regime 2. Precipitation 3. Thunderstorms 4. Fog 5. French Indochina.**

1918

5B–48 551.582(912)

Boerema, J., **Over het klimaat der Paloe-vallei.** [On the climate of the Paloe Valley.] *Natuurkundig Tijdschrift voor Nederlandsch-Indië*, 77:47–54, **1918.** tables. **NNM**—The general climatic features of this location on the west coast of "Midden" Celebes are discussed. Some summarized rainfall data, 1908–1916, are included. *Subject Headings:* **1. Climate of Paloe Valley 2. Paloe Valley, Celebes.**

5B–49 551.524.2(910):551.571

Braak, Cornelius, **De natte-bol-temperaturen als klimatologische factor.** [The wet bulb temperature as a climatic factor.] *Natuurkundig Tijdschrift voor Nederlandsch-Indië*, 77:29–43, **1918.** 4 tables, refs. **NNM**—Wet bulb temperature as a climatic factor in general is discussed and applied to the Netherlands Indies in particular, using 2 hourly values and monthly averages for several stations, mostly in 1913–1914. *Subject Headings:* **1. Temperature 2. Climatology 3. Indonesia.**

5B–50 551.506.5(921)

Jacobson, Ed., **Meteorologiese gegevens verzameld op een tocht naar de Talamau.** [Meteorological notes collected on an expedition near Talamau.] *Natuurkundig Tijdschrift voor Nederlandsch-Indië*, 77:180–186, **1918.** **NNM**—Some fragmentary meteorological observations made in 1917 on a zoological expedition to this mountain (2912 m) on Sumatra's west coast are reported. *Subject Headings:* **1. Mountain climates 2. Sumatra.**

5B–51 551.515

*van Bemmelen, W., **The atmospherical circulation above Australasia according to the pilot balloon-observations made at Batavia.** *K. Akademie van Wetenschappen te Amsterdam, Proceedings of the Section of Sciences*, v. 20, Pt. 2:1313–1327, Aug. **1918.** tables, refs. **NNM**—The general results of direction and velocity of the principal air currents at different levels are given from pilot balloon observations kept at Batavia Observatory, 1909–1917. Summary tables of values for wind directions, temperatures and pressures at varying heights are included. Air currents discussed are the west monsoon, trade, anti-trade, upper trade, and Krakatau winds. (*Same item as* 4F–3, June 1953, *MAB.*) *Subject Headings:* **1. Monsoons 2. Trade winds 3. Atmospheric circulation 4. Australasia 5. Batavia, Java.**

1919

5B–52 551.579.4:551.577.2

Boerema, J., **Over waterstanden in den Tjiliwoeng en regenval tijdens de bandjir te Weltevreden in Februari 1918.** [Water levels of the Tjiliwoeng (River) and rainfall during floods at Weltevreden in Feb. 1918.] *Natuurkundig Tijdschrift voor Nederlandsch-Indië*, 78:183–194, **1919.** tables, refs. **NNM**—Contains 4-hourly rainfall values for Buitenzorg and Gamblok Selong for Feb. 12–22, 1918, plus some averages for other stations for that period and three other days in 1915, 1916. *Subject Headings:* **1. Water level variations 2. Rainfall 3. Tjiliwoeng River, Java.**

5B–53 551.582:551.509.33(910)

Braak, Cornelius, **Atmospheric variations of short and long duration in the Malay Archipelago and neighbouring regions, and the possibility to forecast them.** *Indonesia.* (K.) *Magnetisch en Meteorologisch Observatorium te Batavia, Verhandelingen,* No. 5, **1919.** 57 p. 8 figs., 12 tables, refs. **NNA**—Summary of investigations already made on yearly and daily oscillations of meteorological elements and deviations from normal, of the general character of these deviations, and of their origin and connection with each other. Three groups of variations are distinguished: those of one to several years' duration; those of a few days to a month; and secular variations. The barometric pressure curve of Batavia is studied in particular, noting 3-year waves, and seeking explanation. (*Same item as* 2B–19, Feb. 1951, *MAB.*) *Subject Headings:* **1. Pressure variations 2. Long range forecasting 3. Indonesia.**

5B–54 551.515.2(910)

Braak, Cornelius, **Cyclonen in den Oost-Indischen Archipel.** [Cyclones in the East Indian Archipelago.] *Natuurkundig Tijdschrift voor Nederlandsch-Indië,* 78:195–211, **1919.** 2 figs., tables, refs. **NNM**—Various cyclones observed in the archipelago, 1778, 1843, 1908, 1918, are noted and described along with attending meteorological conditions. Tracks of the 1908 and 1918 ones are traced and attending meteorological conditions of the 1918 occurrence are diagrammed and summarized in brief tables, and comparisons made with 1908 storm. *Subject Headings:* **1. Tropical cyclones 2. Indonesia.**

5B–55 551.577.1:551.555.3(910)

*Braak, Cornelius, **De regenvorming door opstuwing en Sumatra tijdens bohorokdagen.** [Rain formation in ascending air in Sumatra during bohorok (föhn) days.] *Natuurkundig Tijdschrift voor Nederlandsch-Indië,* 78:22–25, **1919.** Also: [**The bohorok wind in Deli.**] *Ibid.,* 77:185–205, **1918.** tables. **NNM**—Table gives deviations from the monthly normals of diurnal rainfall during bohorok. This föhn wind which occurs May–Sept. in the Sumatra plains is described, including causes, characteristics, accompanying conditions and some data, 1901–1916. *Subject Headings:* **1. Rain formation 2. Föhn winds 3. Sumatra.**

1920

5B–56 551.577.37(922)

Boerema, J., **Over grooten regenval op 5 en 6 Februari 1919 in het stroomgebied van den Tjiliwoeng.** [On the heavy rainfall Feb. 5 and 6, 1919 in the river basin of the Tjiliwoeng.] *Natuurkundig Tijdschrift voor Nederlandsch-Indië,* 79:115–119, **1920.** 3 tables, ref. **NNM**—Records for these two days at several stations are tabulated and compared with other heavy rain days. *Subject Headings:* **1. Rainfall extremes 2. Java.**

5B–57 551.585.7(922)

*Braak, Cornelius, **Het bergklimaat van Java.** [The mountain climate of Java.] *Natuurkundig Tijdschrift voor Nederlandsch-Indië,* 79:67–114, **1920.** 7 figs., 12 tables. **NNM**—A thorough summary is made of climatic conditions in mountain regions of Java, using representative data from various high altitude locations, 1912–1916. *Subject Headings:* **1. Mountain climates 2. Java.**

5B–58 551.582(914)

*Coronas, José, **The climate and weather of the Philippines 1903 to 1918.** Manila, **1920.** 195 p. 3 maps (fold.), 29 plates, 40 tables, refs. **NNA**—Author discusses at length the general climatic conditions and individual elements of Philippine weather using observations 1903–1918, and takes up some more extraordinary conditions of weather for particular day, month, season or year. Contents include detailed chapters with illustrative tables, maps, graphs, etc. on temperature, rainfall, relative humidity and cloudiness, surface winds with wind roses, and typhoons at different stations of the islands. An appendix gives tables of weather on official holidays in Manila 1903–1918. References are in footnotes. *Subject Headings:* **1. Climate of Philippine Islands 2. Climatic data 3. Philippine Islands.**

5B–59 551.577

*Indonesia. (K.) Magnetisch en Meteorologisch Observatorium te Batavia, **Maand- en jaargemiddelden van den regenval voor 1977 waarnemingsplaatsen in Nederlandsch-Indië.** [Monthly and yearly rainfall means for 1977 stations of the Netherlands Indies.] Weltevreden, **1920.** 167 p. map (fold.), extensive tables. **DWB**—Rainfall data from observations, 1879–1917, for stations throughout the Indies are tabulated, including monthly and annual rainfall means, number of rainy days per month, and greatest fall in 24 hours each month. Alphabetical list of stations included. *Subject Headings:* **1. Precipitation data 2. Indonesia.**

5B–60 551.506.7

*Indonesia. (K.) Magnetisch en Meteorologisch Observatorium te Batavia, **Results of registering balloon ascents at Batavia.** *Indonesia. (K.) Magnetisch en Meteorologisch Observatorium te Batavia, Verhandelingen*, No. 4, **1916.** 109 p. numerous tables. Also: **Results of pilot balloon observations at and near Batavia in the years 1911–1918.** *Ibid.*, No. 6, **1920.** 105 p. **DWB**—First item, by W. Van Bemmelen, gives record of meteorograph ascents made between 1910–1915. Records of temperature and humidity analyzed and summarized. Wind data given for individual ascents. Second item gives results for each ½ km up to the limit of each ascent. Some 900 ascents included. (*Same item as* 4E–11, May 1953, *MAB.*) *Subject Headings:* **1. Upper air data 2. Upper air wind data 3. Batavia, Java. I. van Bemmelen, W.**—*G.J.E.*

1921

5B–61 551.582:629.13(910)

Braak, Cornelius, **Climatic conditions on the principal air routes in the East Indian Archipelago.** *Natuurkundig Tijdschrift voor Nederlandsch-Indië*, 80:265–278, **1921. NNM, DLC**—Author gives short account of climatic conditions existing on the routes Batavia-Soerabaja and Soerabaja-Makassar, including some summarized data. *Subject Headings:* **1. Aeronautical climatology 2. Indonesia.**

5B–62 551.582.2(911)

*Brooks, C. E. P., **The meteorology of North Borneo.** *Royal Meteorological Society, Quarterly Journal*, 47:294–297, Oct. **1921.** fig., 2 tables, ref. **NN, DLC**—Brief summary of the climate of British North Borneo is made. Observations kept since 1889 and published more or less regularly in the *British North Borneo Herald* are briefly summarized. One table gives temperatures for three stations with humidity and cloudiness for Sandakan; another gives rainfall at all stations for periods ending in 1920. Meteorological returns for area were published in *British North Borneo Herald* up to 1935. *Subject Headings:* **1. Climate of North Borneo 2. North Borneo.**

5B–63 551.552(51)

*Claxton, T. F., **The winds of Hongkong.** (Appendix to Hongkong Observations, 1921.) Hong Kong, Royal Observatory, **1921.** 96 p. plus 11 plates. 25 tables. **NNA**—Differences in direction and velocity of wind at Royal Observatory, Kowloon, and at Victoria Peak, Hong Kong, at different seasons and hours, investigated. Calculations made from observational data, 1914–1918, are tabulated at length. *Subject Headings:* **1. Wind data 2. Hong Kong. I. Hong Kong. Royal Observatory.**

5B–64 551.582(910)

*Hann, Julius, **[Climatic notes and summary data of various localities in the Southeast Asia East Indies.]** *Meteorologische Zeitschrift*, **1889–1921.** As follows: (Titles translated.) **[On the climate of Kaiser Wilhelm-Land, north coast of New Guinea (1871–1872).]** *Ibid.*, 6:37–39, 115, **1889. [Results of meteorological observations in the year 1890 in British North Borneo.]** *Ibid.*, 9:66–67, **1892. [On the climate of the Malayan peninsula.]** *Ibid.*, 15:473–475, **1898. [On the climate of the Netherlands East India (1891–1900).]** *Ibid.*, 22:35–37, **1905. [Results of meteorological observations at the Paruruan research station, north coast of east Java (1903–1904).]** *Ibid.*, 24:568–570, **1907.** Same for 1906–1907, 1908. *Ibid.*, 26:78–79, 1909; 28:274, **1911. [Mean rainfall in the Sunda Islands.]** *Ibid.*, 25:272, **1908. [On the equatorial mountain climate, at the mountain health resort of Tosari, East Java.]** *Ibid.*, 32:128–131, **1915. [Meteorological observations on the summit of Pangerango (3032 m altitude), Java (1912).]** *Ibid.*, 32:118–120, **1915. [On the climate of New Guinea (1911–1912).]** *Ibid.*, 33:82–83, **1916. [Results of 40 year (1866–1905) hourly meteorological observations at Batavia.]** *Ibid.*, 34:424, 430, **1917. [Mountain climate of the Philippines.]** *Ibid.*, 38:203–205, **1921. DWB**—Summaries made from various more detailed original sources. (*Same item as* 2K–46, Nov. 1951, *MAB.*) *Subject Headings:* **1. Climate of Indonesia 2. New Guinea 3. Java 4. Borneo 5. Indonesia.**

5B–65 551.577.2(910)

Hesse, Richard, **Die Niederschlagsverhältnisse in Niederländisch-Indien zwischen 5° nördlicher und 5° südlicher Breite.** [The precipitation conditions in the Netherlands Indies between 5° north and 5° south latitude.] *Petermanns Geographische Mitteilungen*, 67:257–260, **1921.** map (folded), 5 tables, 6 refs. **NNA**—Numerous precipitation observations which have been made in this region are summarized and the results are shown on a large comprehensive map. *Subject Headings:* **1. Precipitation 2. Indonesia.**

1922

5B–66 551.576.11:551.574.1:551.575(91)

*Braak, Cornelius, **On cloud-formation. Nuclei of condensation, haziness, dimensions of cloud-particles.** *Indonesia.* (*K.*) *Magnetisch en Meteorologisch Observatorium te Batavia, Verhandelingen,* No. 10, **1922.** 33 p. tables, refs., eqs. **NNA**—Observations made in the Archipelago of the number of condensation nuclei, determined by Aitken dust-counter, are tabulated, and observations made in the Indian Ocean are appended. Observations made on occurrence of dry fog in the Archipelago are discussed. Measurements made of size of cloud particles by microscope and by observation of coronas are given. Observations are discussed in relation to each other, and observed phenomena are explained. (*Same item as* C–7, March 1950, *MAB.*) *Subject Headings:* **1. Condensation nuclei 2. Cloud formation 3. Indonesia 4. Indian Ocean.**

5B–67 551.553.11(922)

van Bemmelen, W., **Land und Seebrisen in Batavia.** [Land and sea breezes in Batavia.] *Beiträge zur Physik der freien Atmosphäre,* 10(2–3):169–177, Aug. **1922.** 5 tables. **DWB**—On the basis of aerological observations made by the observatory in Batavia, the circulation of the daily sea breeze and its development in horizontal and vertical direction is presented. (*Same item as* 2G–112, July 1951, *MAB.*) *Subject Headings:* **1. Special winds 2. Land and sea breezes 3. Batavia, Java.** —*N.A.S.*

1923

5B–68 551.577.2(910)

*Boerema, J., **Regenval in het noordelijk deel van . . . Sumatra's Oostkust.** [Rainfall in the northern part of Sumatra's East coast.] *Indonesia.* (*K.*) *Magnetisch en Meteorologisch Observatorium te Batavia, Verhandelingen,* No. 11, **1923.** 63 p. 19 maps, extensive tables, refs. In Dutch and English. **NNA**—Rainfall observations for periods of at least 5 years, made on estates of Sumatra's East coast, and official records are used in paper; mean values are calculated for period ending Dec. 31, 1920. Procedures for collecting and assimilating data are reviewed; yearly range of rainfall is discussed; and extensive tables are given. Maps are appended illustrating mean temperature values for year and by month, as well as other phenomena for region. *Subject Headings:* **1. Precipitation data 2. Sumatra.**

5B–69 551.515.53

Braak, Cornelius, **Upper-air research in the Dutch East Indies.** *Pacific Science Congress, 2nd, Melbourne and Sydney, 1923, Proceedings,* 1:645–649, **1923. DA**—Condensed results of aerological observations (temperature and wind) up to approximately 30 km at Batavia Observatory and other locations in Malay Archipelago. *Subject Headings:* **1. Upper air winds 2. Upper air temperatures 3. Malay Archipelago.**—*M.P.K.*

5B–70 551.582(910:265):656.6

Great Britain. Meteorological Office, **Monthly meteorological charts of the East Indian Seas . . . June 1917–Dec. 1923.** London, **1917–1923.** Monthly sheets. (M.O. Official Nos.) **DWB**—Data acquired from British ships passing through area. Isobars, isotherms for air and sea surface, wind roses and ocean currents are charted at regular intervals (5° squares) on maps of Indian seas from Madagascar and east coast of Africa to the Celebes, Philippines and Formosa, including the seas around the East Indian Archipelago and Southeast Asia. On the back of the chart are notes on surface ocean currents, currents in relation to wind in Indian Ocean, reports on tropical cyclones, hurricanes and typhoons, clouds, ice and notes on instruments and procedures. *Subject Headings:* **1. Marine climatic charts 2. Indian Ocean 3. Indonesian Seas 4. Southwest Pacific.**

1924

5B–71 551.524.2(914)

*Arctowski, Henryk and Zych, Stanisław, **Wahania temperatury w latach 1910–1919 na obszarze Filipin.** [Variations of the temperature in the Philippines during the years 1910–1919.] *Kosmos,* Lwow, 49(3):609–659, **1924.** 44 figs., 16 tables, refs. French summary. **NNA**—Tables give monthly mean temperature variations for 16 stations (including one on Guam). Variations are analyzed; causes, systems, relations with other meteorological elements and with other regions sought. *Subject Headings:* **1. Temperature variations 2. Philippine Islands 3. Guam.**

5B–72 551.577.2:551.586:58(910)

Eichelberger, Robert, **Regenverteilung, Pflanzendecke und Kulturentwicklung in der Ostindischen Inselwelt.** [Rainfall distribution, plant cover and agricultural development in the East Indian Archipelago.] *Geographische Zeitschrift,* 30:103–116, **1924.** 2 maps, 8 tables, ref. **NNA**—

Relations between elements of climate (chiefly rainfall), vegetation and agricultural conditions and population density in the different islands of the East Indies are pointed out. *Subject Headings:* **1. Precipitation distribution 2. Agricultural climatology 3. Indonesia.**

5B–73 551.506.1(595)

*Malaya. Meteorological Service, **Summary of Observations. 1924–.** Title varies. Previously called *Meteorological Observations*, 1924–1928. Excerpted from Annual Reports of the Colonial Government. 1947– published and distributed by Malayan Met. Service. **GB-MO**—The characteristic features of the climate of Malaya are summarized. Data on temperature, relative humidity, precipitation, wind directions and wind velocity are given. Autographic hourly records of temperature, relative humidity and rainfall, presented. Climatic data for N. Borneo and Sarawak also included in later issues. (*See also item* 3.1–33, Jan. 1952, *MAB.*) *Subject Headings:* **1. Climatic data 2. North Borneo 3. Malaya.**

1925

5B–74 551.577.1(922)

*Boerema, J., **Uitbreiding van regenbuien te Batavia.** [Distribution of rainshowers at Batavia.] *Indonesia.* (*K.*) *Magnetisch en Meteorologisch Observatorium te Batavia, Verhandelingen*, No. 15, **1925.** 54 p. 8 figs., 18+4 tables, refs. **NNA**—With the purpose of studying duration and extent of rainshowers lasting for parts of an hour, one and more hours, 10 stations were established in and near Batavia in 1923. Stations are described, and data are given. *Subject Headings:* **1. Rainfall duration data 2. Batavia, Java.**

1926

5B–75 551.577.12(910)

*Boerema, J., **Typen van den Regenval in Nederlandsch-Indië.** [Rainfall types in the Netherlands Indies.] *Indonesia.* (*K.*) *Magnetisch en Meteorologisch Observatorium te Batavia, Verhandelingen*, No. 18, [1926]. 103 p. 2 figs., 2 maps attached, tables, refs. In Dutch and English. **NNA**—Rainfall types are defined, including consideration of cause of condensation and air temperature. Factors controlling rainfall in Indies discussed. Sixty-nine rainfall types are found for Java and Madoera and 84 types in outer provinces, Sumatra, Borneo, Celebes, Moluccas, New Guinea, Kei and Aroe Islands. *Subject Headings:* **1. Rainfall types 2. Indonesia.**

1927

5B–76 551.586:633.18(922)

*Bergmann, Agnes, **Beziehungen zwischen Reisbau und Niederschlag auf Java.** [Relations between rice culture and precipitation in Java.] Inaug. Dissertation—[Münster], **1927.** 46 p. plus 9 plates, 27 tables, refs. **NNA**—Cultivation of rice, soil and water conditions, etc. discussed. Climatic factors, especially rainfall, are emphasized, and correlations made between rice crops and rainfall amounts determined for 1916–1922. *Subject Headings:* **1. Agricultural climatology 2. Precipitation 3. Rice culture 4. Java.**

5B–77 551.553.21:551.509.33(922)

Berlage, H. P., Jr., **East-monsoon forecasting in Java, Indonesia.** *Indonesia.* (*K.*) *Magnetisch en Meteorologisch Observatorium te Batavia, Verhandelingen*, No. 20, **1927.** 42 p. 9 figs., 6 tables, refs., 21 eqs. Review by Henry, Alfred J., *Monthly Weather Review*, 55:395–398, **1927. NNA**—Using Braak's suggestions (1919) author finds two mathematical expressions for actual existing relations between barometric pressure and temperature in region, which, when they appear combined, imply a long-periodic oscillation in operation. By mathematical calculations he obtains for the three-year cycle a theoretical length of two years, four months. (*Same items as* 2B–63, Feb. 1951, *MAB.*) *Subject Headings:* **1. Monsoon forecasting 2. Cycles 3. Java. I. Henry, Alfred J.**

5B–78 551.5:63

Carton, P., **La météorologie agricole en Indochine.** [Agricultural meteorology in Indochina.] *French Indochina. Service de la Statistique Générale, Bulletin Économique de l'Indochine*, 30(189): 587–599, **1927.** 2 maps, refs. Similar article in: *L'Agriculture Pratique des Pays Chauds*, N.S., No. 9:199–209, March **1931. NNA**—Definition and advantages of an agricultural meteorological service and network in general are discussed. History of development and present inadequate state of such a service in Indochina, taken up. Maps show meteorological and rainfall stations. No data included. *Subject Headings:* **1. Agricultural meteorology 2. French Indochina.**

5B–79 551.509.33:551.590.23

*Kamerling, Z., **Grondslagen voor een weervoorspelling op langen termijn. 1. Enkelvoudige perioden van wijziging der weergesteldheid.** [Principles of long range weather forecasting.

1. Simple periods in weather changes.] Leiden, **1927.** 36 p. 15 figs., tables. **DWB**—Monthly rainfall of East Java is tabulated in synodic rotations of Venus, Mars, Jupiter, Saturn, Uranus. Other rainfall and temperature data are also considered. Remarkable agreements found but no method of forecasting from them is described. (*Same item as* 2B–66, Feb. 1951, *MAB.*) *Subject Headings:* **1. Long range forecasting 2. Planetary influences 3. Java.**—*C.E.P.B.*

5B–80 551.543.1(914)

Przepiórski, Wincenty, **O przebiegu dziennym cisnienia atmosferycznego w Manili.** [Diurnal variations of atmospheric pressure at Manila.] *Kosmos,* Lwow, 52(28):351–356, **1927.** fig., 3 tables. Summary in French. **NNA**—Hourly barometric observations at Manila, 1910–1919, are examined and means calculated for days of the first and last quarters of the moon. Small tables give maximum and minimum values. Concluded that although the moon has some effect on diurnal march of pressure, it is very small. *Subject Headings:* **1. Diurnal pressure variations 2. Lunar influences 3. Manila, Philippine Islands.**

5B–81 551.524.2

*Zych, Stanisław, **O wahaniach temperatury na obszarze Japonji, Chin i Indochin w latach 1910–1919.** [Variations of temperature observed in Japan, China and Indochina during the period 1910–1919.] *Kosmos,* Lwow, 52(1/2):183–299, **1927.** 29 figs., 75 tables, refs. Summary in French p. 222–224. **NNA**—The rainfall regime of this entire region is theoretically studied. Temperature variations for 75 stations of the area are tabulated including 14 in Indochina and several others in South China and Formosa. Graphs and charts are constructed and a systematic pattern of temperature variations, year to year, sought. *Subject Headings:* **1. Temperature variations 2. Japan 3. South China 4. Southeast Asia.**

1928

5B–82 551.509.33

Boerema, J., **Seasonal forecast on Java.** *Pacific Science Congress, 3rd, Tokyo, 1926, Proceedings,* 2:1364–1366, **1928.** eqs. **DA**—Brief report of research aimed at determining for seasonal forecast purposes correlation between sea temperatures and rainfall and deviation of air-pressure (from a 3-year normal) and rainfall during the east monsoon at Java. *Subject Headings:* **1. Seasonal forecasting 2. Rainfall forecasting 3. Java.**

5B–83 551.582(596)

†*Carton, P., **Le climat de l'Indochine.** [The climate of Indochina.] *French Indochina. Service de la Statistique Générale, Bulletin Économique de l'Indochine,* 31(192):71–109, **1928.** charts, diagrams, tables. **NNA.** Also published as a separate, **1934.** 31 p. 15 figs., 2 tables, 20 refs. At head of title: Gouvernement de l'Indochine, Direction de l'Instruction Publique. **DWB**—Thorough account of climate of Indochina, discussing general factors, particular elements, monsoon effects, depressions, typhoons and storms. Climatic means for about 20 stations are tabulated, as well as rainfall means for numerous stations of Indochina and some for neighboring localities for varying numbers of years. Comprehensive account of climate of Indochina with diagrams, charts, summary tables and good bibliography. *Subject Headings:* **1. Climate of French Indochina 2. French Indochina.**

5B–84 551.525.2(922)

Paravicini, Eugen, **Bodentemperaturen auf Java.** [Soil temperatures on Java.] *Beiträge zur Geophysik,* 19:378–386, **1928.** 2 figs., table, 19 refs. English summary. **NN**—Results of measurements of air and soil temperature (at 7 and 15 cm depths) and of rainfall amount near Lembang, Java, May 1921–April 1922 are reported. Causes for very low differences of temperature are explained. *Subject Headings:* **1. Soil temperatures 2. Temperature 3. Rainfall 4. Lembang, Java.**

5B–85 551.573(914)

*Selga, Miguel, **The evaporation of Manila.** Manila, **1928.** 15 p. 2 graphs, 10 tables, 13 refs. **NNA**—Characteristics of evaporation at Manila are derived from observations that have been kept at three different locations in the city, 1870–1927. Tables give summary values of the three series, frequency calculations, etc. *Subject Headings:* **1. Evaporation 2. Manila, Philippine Islands.**

5B–86 551.578.13(914)

*Selga, Miguel, **The intensity of rainfall at Manila.** Manila, **1928.** 27 p. 6 diagrs., 9 tables, 15 refs. **NNA**—The record of an automatic rain gage in Manila, 1909–1927 is studied and discussed thoroughly. Values are published with the purpose of establishing knowledge of rainfall intensities

for the use especially of hydraulic engineers. *Subject Headings:* **1. Rain intensities 2. Manila, Philippine Islands. I. Philippines, Weather Bureau.**

5B–87 551.578.13(914)

*Selga, Miguel, **The intensity of rainfall in the main cities of the Philippines.** Manila, **1928.** 17 p. 3 diagrs., 4 tables, 5 refs. **NNA**—Rainfall intensities are systematically calculated for 5 main cities of the Philippines, 1910–1927, (excluding Manila): Vigan-Laoang, Baguio, Iloilo, Cebu, and Zamboanga, so that construction engineers can have knowledge of intensity or excessiveness of the rainfall in these places. *Subject Headings:* **1. Rain intensities 2. Philippine Islands.**

5B–88 551.521.11(914)

*Selga, Miguel, **The sunshine of Manila.** Manila, **1928.** 22 p. 2 figs., 8 tables, 18 refs. **NNA**—Duration of sunshine in Manila is studied. All data and observations, with a few exceptions, used are taken from *Bulletins* and *Annual Reports* of the Manila Observatory 1890–1927. Various means, extremes, and other values calculated from these data are tabulated. *Subject Headings:* **1. Sunshine duration 2. Sunshine data 3. Manila, Philippine Islands. I. Philippines. Weather Bureau.**

5B–89 551.506:551.574.41(922)

*Visser, S. W., **Dauwmetingen te Batavia.** [Dew measurements in Batavia.] *Natuurkundig Tijdschrift voor Nederlandsch-Indië*, Batavia, 88(3):229–251, **1928.** 2 figs., 10 tables, 11 refs. Review in, *Meteorologische Zeitschrift*, 47(5):195–196, **1930. DLC**—In the observatory of Batavia special measurements of dew amount were made in 1926–1927; for this investigation the author worked out a method of observation and computation. The problem of water balance during dew formation was studied. The mean amount of dew during the easterly monsoon (July–Aug. 1927) was 0.15 mm during the night, the maximum was 0.27 mm; during the westerly monsoon the mean amount was 0.25 mm and the maximum 0.33 mm. On the average, 0.11 mm of dew precipitated to the soil surface. (*Same item* as 3D–110, April 1952, *MAB.*) *Subject Headings:* **1. Dew data 2. Dew intensity 3. Drosometers 4. Batavia, Java.**—*N.T.Z.*

1929

5B–90 551.543.3(910)

Berlage, H. P., Jr., **Über die Ursache der dreijährigen Luftdruckschwankung.** [On the cause of the three-year atmospheric pressure variation.] *Meteorologische Zeitschrift*, 46:249–259, **1929.** 4 figs., 2 tables, 17 refs., 3 eqs. **NNA**—The 3-year pressure and temperature cycles observed in the Malayan Archipelago and northern Australian region are discussed and analyzed. *Subject Headings:* **1. Pressure variations 2. Temperature variations 3. Indonesia.**

5B–91 551.582(910)

*Braak, Cornelius, **Het Climaat van Nederlandsch-Indië.** [The climate of the Netherlands Indies.] *Indonesia.* (*K.*) *Magnetisch en Meteorologisch Observatorium te Batavia, Verhandelingen*, No. 8, **1921–1929.** 11 pts. in 2 v. figs., maps, tables, refs. In Dutch with detailed English summaries and tables of contents. **DLC**—This important work consists of 8 parts combined in 2 volumes. Vol. 1 with 528 p. in Dutch, and Vol. 2—272 p. in English. Vol. 1, Pt. 1 contains an historical introduction, describes meteorological stations, observations and calculations, and general remarks on the general features of climate, influence of orographic features, the upland climate, mountain climates, and differences between the monsoons. Pt. 2 takes up winds including: monsoons; upper air winds; circulation at different levels; deviations from monsoon systems; land and sea breezes; mountain and valley winds; wind velocities; cyclones; squalls and whirlwinds. Air pressure distribution, daily oscillation; extreme values, non-periodical variations are discussed. Pt. 3 takes up rain, including: formation of showers: periods of increased rainfall, distribution; tropical rainbelt; monsoons; local effects; daily variations; thunderstorms; intensities and duration of rainfall; drought; rain observations at sea and influence of forests; illustrative maps are included. Pt. 4 discusses cloudiness and sunshine: causes of cloud formations; types and variations; observations of cloudiness; sunshine observations; variations; observations of cloudiness at sea; intensity of sunlight. Pt. 5 takes up temperature and humidity: variations and distribution; observations at sea; influence of altitude; influence of rainfall on air temperature; night frost; soil temperatures. Pt. 6 continues with a discussion of relative humidity, including: averages, particular properties in the dry season, diurnal variations; tension of water vapor; wet-bulb temperatures. Evaporation is considered: monthly and annual means and absolute maxima; differences between stations; diurnal variations. Dew and morning fog are discussed, and finally, transparency of the air and haziness, including: observations; dense haziness in abnormally dry years; origin of the dry fog. Pt. 7 discusses lightning and thunder: observations at sea and on land; annual and diurnal variations; and hail. Comparison

of East Indian climate with that of other regions and where best results are obtained with crops of sugar, coffee, tea, rice, tobacco, cinchona. Finally, Pt. 8 makes additions to other chapters in other parts on: wind; rain, diurnal variations at sea; cloudiness and sunshine, cloud caps, variations at sea; temperature; lightning and thunder. This part includes an alphabetical index of Vol. 1. Vol. 2 deals with the local climates of the different islands, in 3 parts with 545 p. in Dutch and 257 p. in English. Vol. 2, Pt. 1 contains Chap. 1 on Sumatra giving complete account with data and maps of the climatological elements by regions. Pt. 2 contains a similar report on climatological elements and regions of Java and Madoera. Pt. 3 contains material of similar nature on Borneo, Celebes, Minor Sunda Island and Timor, Moluccas, Zuidwester-, Zuidooster-, Kei- and Aroe Islands, and New Guinea, along with additions to Chap. 1 and 4, and an index to Vol. 2. Vol. 3 which was to include extensive climatological tables was never completed. (*Same item as* 2C–190, 2G–127 and 2G–129, March, July 1951, *MAB.*) *Subject Headings:* **1. Climate of Indonesia 2. Climatic data 3. Indonesia.**

5B–92 551.594

Deppermann, Charles E., **Initial studies in atmospheric electricity at the Manila Observatory, Oct. 1927–Dec. 1928.** Manila, **1929.** 17 p. 25 figs. **NN**—Work up to that time, problems, meteorological influences, and suggestions for future study are discussed. Various records of electrometers under varying meteorological conditions are reproduced. *Subject Headings:* **1. Atmospheric electricity 2. Manila, Philippine Islands.**

5B–93 551.577.2(05)(596)

*French Indochina. Service Météorologique, **Bulletin Pluviométrique, 1906–1929.** Title varies: *Tableaux Mensuels, Annuels et Carte;* later: *Relevés Journaliers.* Phu-Lien (Hanoi), Observatoire Central, 1911–1931. extensive tables. **NNA**—Daily rainfall values are tabulated by month for numerous stations of Indochina. No text. *Subject Headings:* **1. Precipitation data 2. Monthly data bulletins 3. French Indochina.**

5B–94 551.582.2

*Jeffries, C. W., **Meteorological records 1884–1928.** (Appendix to Hong Kong, Royal Observatory Meteorological Results, 1928.) Hong Kong, **1929.** 16 p. 15 tables. **NNA**—Mean monthly values of each year are tabulated for: barometric pressure, temperature (normals, maxima, and minima), temperature of evaporation, vapor tension, relative humidity, duration of bright sunshine, rainfall, cloud, resultant wind direction, wind velocity, and finally a table of normal values of the principal meteorological elements for five-day periods. *Subject Headings:* **1. Climatic data 2. Hong Kong. I. Hong Kong. Royal Observatory.**

5B–95 551.578.72(914)

Selga, Miguel, **Hail in the Philippines.** Manila, **1929.** 20 p. fig., 25 refs. **NNA**—All reports of hail in the Philippines both from old documents or from more recent weather reports are collected and studied. Occurrences are divided into those at high and those at low altitudes. First part of work lists individual occurrences with brief description. The second part attempts an explanation of such observations. (*Same item as* D–150, April 1950, *MAB.*) *Subject Headings:* **1. Hail 2. Philippine Islands.**

5B–96 551.5(05):016

†Selga, Miguel, **The publications of the Observatory of Manila.** Manila, **1929.** 21 p. 3 tables, extensives refs. **NNA**—All publications of the observatory on meteorology, seismology and magnetism are listed according to three classes. The first, regular publications of the Weather Bureau, includes the *Monthly Bulletin* and the *Annual Report,* with record of each year's series, printer, year of publication, pages, plates and figures through 1927. The second class, special publications, lists those with and without name of authors and without connection to one another and those of the regular series begun in 1927 entitled, *Publications of Manila Observatory.* The third lists articles (appearing elsewhere) by members of the Philippines Weather Bureau. *Subject Headings:* **1. Bibliographies 2. Manila Observatory, Philippines.**

5B–97 551.553.21

Umbgrove, J. H. F., **The influence of the monsoons on the geomorphology of coral islands.** *Pacific Science Congress, 4th, Batavia and Bandoeng, 1929, Physical Papers,* IIA:49–54, **1929.** 4 figs. **NNA**—Differences in character of coral islands may be attributed to influence of prevailing winds. Many illustrations of such differences are found in the East Indian Archipelago, the reefs of which are all within the monsoon zone. Examples are cited and explained. *Subject Headings:* **1. Coral atolls 2. Monsoon effects 3. Geomorphology 4. Indonesia.**

1930

5B–98 551.582(593)

Brandli, H., **Climate in Siam.** (In: Siam. Ministry of Commerce and Communications, **Siam, nature and industry.** Bangkok, **1930.** 6 p. chart fold., 2 tables.) **NNA**—General descriptive account of climate of Thailand. Average distribution of rainfall, 1901–1921, is plotted on small maps for each month. Tables give summaries of meteorological observations at Rangsit, 1925–1929, and at Chiengmai, 1927–1929. *Subject Headings:* **1. Climate of Thailand 2. Rainfall distribution 3. Thailand.**

5B–99 551.525

*Carton, P., **Température du sol à Phu-Liên (Tonkin).** [Soil temperature at Hanoi, Tonkin.] *French Indochina. Service de la Statistique Générale, Bulletin Économique de l'Indochine,* Sect. B, 33:688–707, **1930.** graphs, 5 tables. **NN**—Two-hourly observations (day and night) of air temperature, and ground temperatures at 15 cm and 50 cm depths, kept July 1929–June 1930, at Hanoi are reported; maxima, minima, means, amplitudes, etc. are tabulated for each month and comparative curves are drawn. Influence of sunshine and rain showers on temperatures noted. *Subject Headings:* **1. Temperature data 2. Soil temperature data 3. Hanoi, French Indochina.**

5B–100 551.582(911)

†Fehn, Hans, **Die Insel Borneo.** [The island of Borneo.] *Geographische Gesellschaft in München, Mitteilungen,* 23(2):115–194, **1930.** Section on climate, p. 156–183. 5 figs., refs. p. 186–194, including 56 refs. on climate. **NN**—A fairly thorough descriptive discussion of the principal features and particular elements of Borneo climate is included in a general geographic survey of Borneo. *Subject Headings:* **1. Climate of Borneo 2. Borneo.**

5B–101 551.582:551.586:58(51)

Fenzel, G., **Problems of reforestation in Kwangtung with respect to climate.** *Lingnan Science Journal,* Canton, 9(1–2):97–113, June **1930.** 3 figs., 4 tables, refs. **NN**—The question is raised whether or not forests ever existed in Kwangtung, and evidence discussed briefly. The climatic features of the province influencing plant distribution are taken up, including temperature and principally rainfall. Finally, forest regions in other climatic regions similar to coastal Kwangtung are discussed, and conclusions drawn as to possible original forests and tree types suitable for reforestation. *Subject Headings:* **1. Climatology 2. Bioclimatology 3. Forests 4. Kwangtung Province, South China.**

5B–102 551.582.3(596)

French Indochina. Service Météorologique, **Atlas.** Hanoi, Service Géographique de l'Indochine, **1930.** 42 p. charts. **NN, NNA**—Atlas consists entirely of meteorological charts with brief introduction. Meteorological and climatic networks and communications systems are plotted, as well as two-monthly isobars, trajectories of typhoons in the China Sea 1911–1929, wind regime, three-monthly isotherms, precipitation regime, and rainfall quantity and frequency charts. *Subject Headings:* **1. Climatic charts 2. Atlases 3. Typhoons 4. French Indochina 5. China Sea. I. Bruzon, E.**

5B–103 551.582(267)

*Gallé, P. H., **Klimatologie van den Indischen Oceaan.** [Climatology of the Indian Ocean.] *Netherlands. (K.) Meteorologisch Instituut, Mededeelingen en Verhandelingen, Ser. A,* No. 29a, **1924.** 87 p. 7 figs., 11 tables, refs. English summary p. 51–59; No. 29b, **1928.** 38 p. 13 figs., 4 tables. English summary p. 31–34; No. 29c, **1930.** 31 p. 15 figs., tables. English summary p. 29–31. **NNA, DLC**—In this series of three papers author investigates meteorological and ocean conditions in the whole region of the Indian Ocean including some of the area within the East Indian Archipelago. Chapters deal consecutively with atmospheric pressure, wind, currents, temperature of water and air, precipitation, frequency of air pressure and stormy winds, and tropical cyclones. Isobaric and isothermic charts, charts of general air and water circulation, of mean temperatures for each two-degree square, of amounts of precipitation, its variations, etc., are included as well as tabulated data. *Subject Headings:* **1. Marine climatology 2. Marine climatic data 3. Oceanography 4. Indian Ocean 5. Indonesian Seas.**

5B–104 551.557(267)

*Ramakrishnan, K. P., **Winds in the first 3 km. over Port Blair.** *India. Meteorological Dept., Scientific Notes,* 2(16):46–63, **1930.** 3 figs., 9 tables, ref. **NNA**—The wind velocities and directions observed at different heights up to 3 km over Port Blair are compared with the gradient velocities and directions calculated from the surface pressure distribution. Data for two years, July 1926–

June 1928, are used and partially reproduced in tables. *Subject Headings:* **1. Upper air winds 2. Port Blair, Andaman Islands.**

5B–105 551.573

Selga, Miguel and Guilmet, B., **Évaporation à Manille et à Phu-Liên.** [Evaporation at Manila and at Phu-Lien (Hanoi).] *French Indochina. Service de la Statistique Générale, Bulletin Économique de l'Indochine, Sec. B*, 33:101–125, Feb. **1930.** figs., 7 tables. **NNA**—Using evaporation observations made at Manila, 1910–1927, monthly and daily means, frequencies of different values, and other applied (in relation to vegetation, industry, rainfall) aspects of evaporation are noted. The second part, by GUILMET, considers evaporation at Phu-Liên, using observations, 1907–1927. Summary tables of monthly means and curves of related climatic elements are included. *Subject Headings:* **1. Evaporation 2. Manila, Philippine Islands 3. Hanoi, French Indochina.**

5B–106 551.585.7:631.4

Senstius, M. W., **Studies on weathering and soil formation in tropical high altitudes.** *American Philosophical Society, Proceedings*, 69:45–97, **1930.** fig., 7 tables, 34 refs. **DWB**—Soil samples were collected from 12 mountains in Java and Philippines, heights up to 3265 m. Analyses are given, and climatic control of soil formation discussed. Podsols were not found in high altitudes. (*Same item as* 2K–108, Nov. 1951, *MAB.*) *Subject Headings:* **1. Mountain meteorology 2. Soils 3. Java 4. Philippine Islands.**—*C.E.P.B.*

5B–107 551.582(923)

Vasconcellos, Ernesto de, **Timor; alguns subsidios para o estudo do seu clima.** [Timor; some contributions to the study of its climate.] *Sociedade de Geografia de Lisboa, Boletim*, Ser. 48, No. 11/12:300–304, Nov./Sec. **1930. NNA**—Brief generalized description of principle climatic elements. *Subject Headings:* **1. Climate of Timor 2. Timor.**

1931

5B–108 551.582(596/9)

Arqué, Paul, **État des connaissances présentes sur le climat de l'Indochine.** [State of present knowledge on the climate of Indochina.] *Société de Géographie Commerciale de Bordeaux, Revue de Géographie Commerciale*, 56(4ᵉtrimes.):14–28, **1931.** small tables. **NNA**—A general summary review of the climatic characteristics of Indochina is made, using some fragmentary and some systematic data summarized for several stations for varying periods since 1907. *Subject Headings:* **1. Climate of French Indochina 2. French Indochina.**

5B–109 551.583.2:581.54(922)

Berlage, H. P., Jr., **Über die dreijährige Klimaschwankung in der Jahresringbildung des Djatiholzes auf Java.** [The three year climate variations in the annual ring growth of the teakwood in Java.] *Beiträge zur Geophysik*, 32:223–225, **1931.** 5 refs. English summary, **NN.** Also: **Over het verband tusschen de dikte der jaarringen van djatiboomen an den regenval op Java.** [On the relation between width of annual rings of teakwood and rainfall in Java.] *Tectona*, Buitenzorg, 24:939–953, Oct. **1931. DA**—1) By measurements of tree ring growth in Java the well known 3-year weather cycle could be traced back more than four centuries. 2) Growth of teak varies with duration of rainy season. Annual values for 1914–1929 are given. *Subject Headings:* **1. Climatic variations 2. Dendrochronology 3. Climatic cycles 4. Java.**

5B–110 551.577.22(922)

*Boerema, J., **Average number of rain-days in Java and Madoera during the four consecutive driest months of the year for every station.** *Indonesia.* (*K.*) *Magnetisch en Meteorologisch Observatorium te Batavia, Verhandelingen*, No. 23, **1931.** 25 p. map attached, extensive tables, ref. Title and text in Dutch and English. **NNA**—Chart and data are based on observations made at 2489 stations up to 1928. Paper consists mainly of tables. *Subject Headings:* **1. Rainfall distribution 2. Java 3. Madoera.**

5B–111 551.577.2(910)

*Boerema, J., **Regenval in Nederlandsch-Indië.** [Rainfall in the Netherlands Indies.] *Indonesia.* (*K.*) *Magnetisch en Meteorologisch Observatorium te Batavia, Verhandelingen*, No. 24, **1931.** 2 v. **NNA**—Vol. 1 contains mean rainfall figures for 3293 rainfall stations in the Netherlands Indies, calculated from observations made during the period 1879–1928 (244 p., map, extensive tables). Vol. 2 is an atlas containing maps of the mean yearly and monthly rainfall on Java and Madoera, with map showing stations. *Ibid.*, No. 14, 1925, is similar collection of data and maps for period 1879–1922; covered by No. 24, 1931, however. *Subject Headings:* **1. Precipitation data 2. Java 3. Madoera.**

5B–112 551.582(910, 59

*†Braak, Cornelius, **Klimakunde von Hinterindien und Insulinde.** [Climatology of Southeast Asia and the Archipelago.] (In: Köppen, W., and Geiger, R., (ed.), **Handbuch der Klimatologie**, v. 4, Pt. R. Berlin, **1931.** 125 p. 31 figs., 20 tables, 37 refs.) **NN**—Thorough climatological survey is made of the region, including: Indochina, Siam, Burma, Philippines, and the East Indian Archipelago. All climatic elements are considered including pressure, rainfall, temperature, storms, cyclones, thunderstorms, hail, local winds and climatic peculiarities, upper air conditions, etc. *Subject Headings:* **1. Climate of Southeast Asia 2. Climate of Indonesia 3. Southeast Asia 4. Indonesia**

5B–113 551.57

*Carton, P., **Considérations sur l'importance et les méthodes de mesure de l'évaporation en météorologie agricole.** [Considerations on the importance and the methods of measuring evaporation in agricultural meteorology.] *French Indochina. Service de la Statistique Générale, Bulletin Économique de l'Indochine*, Sec. B., 34:900–933, Oct. **1931.** photos, diagr., tables, refs. **NNA**—Article deals mostly with instrumental and procedural problems. The Piché evaporimeter used at the Central Observatory, Phu-Liên (Hanoi), is described in particular along with type of shelter and problems. Tables give comparative data for the different types of shelters tested at Phu-Liên and at Phu-Hô. Other evaporimeters are briefly described. Finally, tables of monthly evaporation means, 1925–1931, and of monthly means for 1930, at various stations of Indochina using Piché evaporimeter are appended. *Subject Headings:* **1. Evaporation 2. Evaporimeters 3. Agricultural meteorology 4. French Indochina.**

5B–114 551.582(51

*Claxton, T. F., **The climate of Hong Kong 1884–1929.** (Appendix to: Hong Kong. Royal Observatory, Observations, 1931.) Hong Kong, Royal Observatory, **1931.** 38 p. plus 31 plates, 34 tables. Also similar study: **Climate of Hongkong. 1915.** 39 p. plus 25 plates, 25 tables. **NNA**—Survey of climate of Hong Kong is made based on observations since the foundation of the Royal Observatory 1884. Means, maxima, minima, etc. of all the usual elements including sunshine, evaporation, wind, etc. are calculated. Notes and data on typhoons included. A section treats weather forecasting and its rules for Hong Kong. Numerous schematic diagrams and curves for the several elements and charts of typhoon tracks are appended. *Subject Headings:* **1. Climate of Hong Kong 2. Climatic data 3. Urban climates 4. Typhoons 5. Weather forecasting 6. Hong Kong. I. Hong Kong. Royal Observatory.**

5B–115 551.521.21(596

*Guilmet, B., **Observations actinométriques de l'Observatoire Central de l'Indochine à Phu-Liên.** [Actinometric observations of the Central Observatory of Indochina at Hanoi.] *French Indochina. Service de la Statistique Générale, Bulletin Économique de l'Indochine*, Sec. B, 34: 1114–1127, Dec **1931.** fig., 6 tables, 3 refs. **NN**—Mean values of radiation, temperature and cloud are determined for the Hanoi region using observations kept with an Arago actinometer, 1910–1930. Summary curves and tables are included. *Subject Headings:* **1. Actinometric data 2. Radiation 3. Temperature 4. Clouds 5. Hanoi, French Indochina.**

5B–116 551.509.33:551.577

*Iyer, V. Doraiswamy, **Rainfall of Siam; its normal distribution and relation to Indian rainfall; possibility of forecasting monsoon rains.** *India. Meteorological Dept., Scientific Notes*, Poona, 4(38):69–85, **1931.** map, 9 figs., 11 tables, refs. **NNA**—Normal distribution of rainfall and rainfall averages and numbers of rainy days are tabulated and briefly discussed for 73 stations of Siam, 1906–1924. A formula is deduced for forecasting early in June the monsoon rain of Upper Siam by using correlation coefficients of incidence of rainfall in Upper Siam and in Northwest India and rainfall of Upper Siam during the monsoon period June to Sept. and the pressure and temperature at various centers of action in the world in that quarter and the two preceding quarters. (*Same item as* 2B–105, Feb. 1951, *MAB.*) *Subject Headings:* **1. Long range forecasting 2. Correlations 3. Precipitation forecasting 4. Monsoon rains 5. Thailand 6. Northwest India.**

5B–117 551.582.3(596

[Meteorological diagrams mostly for observations at Phu-Lien (Hanoi).] In each month's issue of: *French Indochina. Service de la Statistique Générale, Bulletin Économique de l'Indochine* **1924–1931. NN**—Each chart sums up climatic conditions for the month giving curves for temperature, pressure, evaporation, humidity, nebulosity and symbols for wind and general weather conditions for each day. *Subject Headings:* **1. Climatic charts 2. Climate of Hanoi, Indochina 3. Hanoi, French Indochina. I. French Indochina. Service de la Statistique Générale.**

5B–118 551.524.33(914)

*Selga, Miguel, **The severity of summers at Manila.** *Philippines. Observatorio Meteorologico, Manila, Publication*, 2(2), **1931.** 31 p. 6 tables, 7 refs. In English and Spanish. **NN**—A system is given for determining the severity of summers at Manila by grading according to the absolute maximum temperature of the season or according to the highest monthly mean temperature. Tables illustrate relative intensity of summers. Maximum temperature of every month in the last 60 years given; also frequency of times that maximum temperature of a definite degree has been observed each year, etc. *Subject Headings:* **1. Summer temperatures 2. Manila, Philippine Islands.**

5B–119 551.552(914)

*Selga, Miguel, **The velocity of the wind at Manila, Baguio, Iloilo and Cebu.** Manila, **1931.** 35 p. 3 plates, 14 tables, 21 refs. **NNA**—Principal data on the velocity of the wind in the main cities of the Philippines have been collected and summarized. Data considered range from about 40 to about 20 years duration. Mean, maximum, minimum, frequencies, etc. of wind velocities are calculated and tabulated. *Subject Headings:* **1. Wind velocity data 2. Philippine Islands.**

1932

5B–120 551.524.31(922):551.590.22

Chapman, S., **The lunar diurnal variation of atmospheric temperature at Batavia, 1866–1928.** *Royal Society of London, Proceedings, Ser. A*, 137:1–24, July 1, **1932.** 11 figs., 5 tables, refs., 17 eqs. **NN**—Theoretical article investigates temperature variations at Batavia in relation to lunar tide and lunar semi-diurnal variations of barometric pressure. "Conclusion reached is that the vertical flow of heat is unlikely to be important over the land. Hence a temperature variation approaching the adiabatic value is likely to be associated with the lunar atmospheric tide at a land station." Theory is developed. *Subject Headings:* **1. Temperature variations 2. Lunar influences 3. Atmospheric tides 4. Batavia, Java.**

5B–121 551.521.63(922)

Clay, J. and Clay-Jolles, T., **Measurements of ultraviolet sunlight in the tropics.** (*K.*) *Akademie van Wetenschappen te Amsterdam, Proceedings of the Section of Sciences*, 35(1–5):69–82, **1932.** 7 figs., 2 tables, 6 refs. **NNA**—Results of observations on intensity of ultraviolet solar radiation in Bandoeng, 1928–1929, are discussed, including the methods of observations and of the reduction of cadmium cells to the standard. Results of observations are summarized in tables and diagrams. Thickness of the ozone layer is considered. *Subject Headings:* **1. Ultraviolet radiation 2. Ozone layer 3. Bandoeng, Java.**

5B–122 551.577.37(914)

Selga, Miguel, **The largest 24-hour rainfall in the world.** Manila, **1932.** 14 p. 3 plates, 3 tables, 18 refs. **NNA**—Study is made of the record of the heavy rainfall that fell at Baguio, Philippines, July 14–15, 1911, considering amount, intensity, character and damage. A list is appended containing other cases in the Philippines where daily rainfall was above 500 mm (1902–1931). *Subject Headings:* **1. Rainfall extremes 2. Baguio, Philippine Islands 3. Philippine Islands.**

1933

5B–123 551.582 551.585(51)

*Chapman, B. Burgoyne, **The climatic regions of China.** *Nanking University. Agriculture and Forestry College, Bulletin*, N.S., No. 3, **1933.** 77 p. 15 figs., 13 maps, 7 tables. **NN**—Available climatic data are arranged and classified in accessible form by regions, including the "south," southeastern hills and southwestern plateaux of China. Tables contain data (regionally arranged) on rainfall with averages, excessive falls in 24 hours with regional averages, and temperature, and lists of stations and climatic regions. The figures show mean rainfall and temperature conditions at 165 stations typical of various regions. The maps of all China show climatic regions, stations, isotherms, isohyets, relief, etc. *Subject Headings:* **1. Climate of China 2. Climatic regions 3. Southern China.**

5B–124 551.557(51)

Heywood, G. S. P., **The upper winds of Hong Kong, from observations made with pilot balloons 1921–1932.** Hong Kong, Royal Observatory, **1933.** 13 p. 9 plates. **GB-MO**—Results of 1382 pilot balloon flights given in two tables and nine plates. Monthly values given of resultant directions and velocities, and of percentage frequencies from different directions. Data up to 30,000 ft where available. (*Same item as* 4F–9, June 1953, *MAB.*) *Subject Headings:* **1. Upper air wind data 2. Hong Kong.**—*G.J.E.*

5B–125 551.557(597)

Hubert, H., **Les courants aériens en Cochinchine.** [Upper winds in Cochin China.] *Académie des Sciences, Paris, Comptes Rendus,* 197:1677–1678, Dec. 18, **1933. DLC**—Observations made from 1931 analyzed and seasonal distribution of wind between surface and 10 km shown. (*Same item as* 4E–61, May 1953, *MAB.*) *Subject Headings:* **1. Upper air winds 2. Cochin China, French Indochina.**—*G.J.E.*

5B–126 551.582(914)

Selga, Miguel, **Preliminary report on the weather at Tagaytay.** *Philippines. Science Bureau, Popular Bulletin,* No. 6, **1930.** 24 p. 7 figs., 2 plates, 3 tables. Also: **Report on the temperature and rainfall at Tagaytay, Cavite.** *Natural and Applied Science Bulletin,* Manila, 3:245–247, **1933.** tables. **NN**—1) Climate of Tagaytay is studied using two years observations, 1928–1930; tables and diagrams comparing the usual elements at Manila, Baguio and Tagaytay are included for the purpose of considering the suitability of Tagaytay for a health resort. A confirmation of this report appears in *Philippines, Weather Bureau, Monthly Bulletin, Meteorological Note,* No. 12, Dec. 1931. 2) Results of climatic observations at Tagaytay, 1928–1932, are summarized in table and compared with corresponding values for Baguio and Manila. *Subject Headings:* **1. Climate of Tagaytay, Luzon, Philippine Islands 2. Philippine Islands.**

1934

5B–127 551.509.33(910)

†Berlage, H. P., Jr., **Further researches into the possibility of long-range forecasting in Netherlands India.** *Indonesia.* (*K.*) *Magnetisch en Meteorologisch Observatorium te Batavia, Verhandelingen,* No. 26, **1934.** 31 p. 17 figs., 6 tables, 43 refs. **NNA.** Also: **Über einen durch Wellen von mehrjähriger Periode erzeugten Symmetriepunkt in der Barometerkurve von Batavia.** [On a symmetry point produced by waves of a many-year period in the barometric curve at Batavia.] *Meteorologische Zeitschrift,* 45:141–143, **1928. DWB**—Author studies seven-year cycle (in the weather of Java region) called Pacific cycle. He assumes 3- and 7-year oscillations to be related to each other, sometimes weakly, sometimes strongly. Contents include: the southern oscillation and its unique features; generalities on long periodic pressure oscillations; the 3-year oscillation; other instances of long periodic oscillations; symmetry-points and repetitions of analogous sequences of variations; weather-fluctuations according to tree-ring measurements; relations between pressure variations in Netherlands Indies and rainfall variations in Polynesia; Juan Fernandez, a key station to long range forecasting; and conclusions. *Subject Headings:* **1. Long range forecasting 2. Periodicities 3. Symmetry points 4. Atmospheric pressure 5. Sunspots 6. Java 7. Indonesia.**

5B–128 551.509.3:551.553.1(922)

Boerema, J., **Daily forecast of windforce on Java.** *Indonesia.* (*K.*) *Magnetisch en Meteorologisch Observatorium te Batavia, Verhandelingen,* No. 27, **1934.** 8 p. fig., 2 tables. **NNA**—Author states that such a forecast is possible with a reasonable chance of success; it relies on local observations only and follows from considerations developed in this paper. *Subject Headings:* **1. Wind forecasting 2. Java.**

5B–129 551.584.41

*Carton, P. and Maurand, P. **Première année d'observations climatologique forestière à la Station Expérimentale Forestière de Trang-Bom, Cochinchine.** [First year of observations of forest climatology at the Trang-Bôm Forest Experimental Station, Cochin China.] *French Indochina. Service de la Statistique Générale, Bulletin Économique de l'Indochine,* 37:1169–1179, Nov./Dec. **1934.** tables, graphs. Photostat. **DWB**—Early observations at two stations, one within and one outside of a forested area (170 m apart) in Indochina are described and equipment illustrated. Station locations with respect to forests shown on diagram. Four observations of temperature, humidity, evaporation and rainfall were made each day (1933–4). *Subject Headings:* **1. Microclimatological data 2. Forest influences 3. Cochin China, French Indochina.**—*M.R.*

5B–130 551.526.6:551.582(59)

Chevey, P. and Carton, P., **Les courants de la mer de Chine mériodionale et leurs rapports avec le climat de l'Indochine.** [Currents of the south China Sea and their effects on the climate of Indochina.] *French Indochina. Institut Océanographique, Note,* No. 26, **1934.** 13 p. plus 7 plates, refs. **NN**—The general effects of the surrounding ocean currents, temperatures, etc., on the climate of Indochina are investigated, particularly as distinguished by the winter and summer monsoons. Appended charts show the principal ocean currents, the wind regime, winter and summer, over peninsula and bordering seas, cross section of the adjoining floor of the China Sea, showing isotherms, of the air and sea surface during winter and summer monsoons and for 50 and 100 m depth in the

summer monsoon, and a chart of equal degree of continentalism lines for Indochina. No tabulated data included. *Subject Headings:* **1. Marine influences 2. Sea temperatures 3. Ocean currents 4. Monsoons 5. Climate of French Indochina 6. South China Sea 7. French Indochina.**

5B–131 551.587 551.506.7(914)

*Deppermann, C. E., **The upper air at Manila.** *Philippines. Observatorio Meteorologico de Manila, Publication*, 2(5), **1934.** 29 p. 13 figs., tables. **NN.** Also as: *U. S. Air Weather Service, Report*, No. 806, **1944. DWB**—Meteorograph records of pressure, humidity and temperature kept on airplane flights by U. S. Navy at Manila Bay and a few at Subic Bay, 1930–1932, are studied and used for a general outline of upper air conditions. Data for standard heights and for significant points are tabulated. *Subject Headings:* **1. Upper air data 2. Upper air climatology 3. Manila, Philippine Islands.**

5B–132 551.553.21 551.515.1:551.515.2

§Fochler-Hauke, Gustav, **Monsune, Depressionen und Taifune Südchinas.** [Monsoons, depressions and typhoons of South China.] *Beiträge zur Geophysik*, 43:233–244, **1934.** 3 figs., 11 refs. English summary. **NN**—These three major factors in the climate of South China are each discussed. First the major factor, the monsoons, caused by the Siberian anticyclone in winter and the continental low in summer, are taken up. Next extratropical continental cyclones, conditions for their occurrence, development, tracks, etc., and lastly the typhoons of summer, their physical attributes, forecasting problems, etc., are discussed. *Subject Headings:* **1. Monsoons 2. Depressions 3. Typhoons 4. South China.**

5B–133 551.513

Hubert, Henry, **Sur la circulation générale de l'air atmosphérique au-dessus de l'Indochine.** [On atmospheric circulation over Indochina.] *Académie des Sciences, Paris, Comptes Rendus*, 198:1055–1057, March **1934.** 2 refs. **NN, DLC**—Descriptive summary of atmospheric currents at different altitudes in the different seasons over Indochina, from aerological soundings for which no data are included. *Subject Headings:* **1. Atmospheric circulation 2. Upper air winds 3. French Indochina.**

5B–134 551.582.3(596)

Hubert, Henry, **Étude comparative des climats des colonies françaises.** [Comparative study of climates of French colonies.] *Annales de Physique du Globe de la France d'Outre-Mer*, 1(2):33–62, April **1934.** 64 graphs. **NNA**—A series of climatic graphs serves to give a summary comparison of climates of all French colonies outside the Mediterranean basin, including 14 charts for Indochina, a few for French West Africa, and the rest for other French African colonies. *Subject Headings:* **1. Climatology 2. French Indochina 3. Africa.**

5B–135 551.586:616

†Morin, Henry G. S. and Carton, P., **Contribution à l'étude de l'influence des facteurs climatiques sur la répartition de l'endémie palustre en Indochine.** [Contribution to study of the influence of climatic factors on distribution of endemic swamp diseases.] *French Indochina. Service de la Statistique Générale, Bulletin Économique de l'Indochine*, N.S., 37:459–480, May–June **1934.** map, graphs, tables, 27 refs. **NN**—General note of the insalubrity of tropical climates is made with references to other studies on the subject. Then the climatic conditions of the several regions of Indochina and their effects on occurrence of health and disease problems are described, with particular emphasis on distribution of anopheles. Some summary data for 1931–1932 are tabulated. *Subject Headings:* **1. Medical climatology 2. Mosquitoes 3. French Indochina.**

5B–136 551.582(914)

Selga, Miguel, **Preliminary report on the weather at Mantalongon.** Manila, **1934.** 34 p. 7 plates, 2 tables, refs. **NNA**—Author summarizes the climatic conditions of Cebu (Mantalongon) after studying two years' detailed meteorological observations made there. Some climatic means are tabulated and illustrative graphs constructed. *Subject Headings:* **1. Urban climates 2. Cebu, Philippine Islands.**

1935

5B–137 551.521.12

*Berlage, Hendrik Petrus, **Metingen van de intensiteit van de zonnenstraling op verschillende plaatsen in Ned. Indië in de laatste jaren.** [Measurements of the intensity of solar radiation in various places in the Netherlands Indies in the last years.] At head of title: Overdruk uit het verslag van de 15e vergadering van de vereeniging van proefstation-personeel te Batavia. Oct. **1935.** p. 104–116. 2 figs., 9 tables. Summary in English. **DWB**—Summary made of 20 years solar

radiation measurements in Indies, 1915–1925, by eye readings of pyrheliometers, and 1925–1935, by recording instruments. Summary tables included. *Subject Headings:* **1. Solar radiation 2. Indonesia.**

5B–138 551.591.2(596)

Bruzon, E., **La visibilité horizontale en Indo-Chine.** [Horizontal visibility in Indochina.] *Annales de Physique du Globe de la France d'Outre-Mer*, 2:151–154, Oct. **1935.** charts, p. 144–146. **NNA**—Notes on visibility conditions during the summer and winter monsoon seasons at various points throughout Indochina are accompanied by charts showing numbers of days in each month of 1934 when horizontal visibility was less than 2 km. *Subject Headings:* **1. Visibility 2. Monsoons 3. French Indochina.**

5B–139 551.582:551.586(596)

Chochod, Louis, **Le climat indochinois et son influence sur la littérature populaire des Annamites.** [Indochinese climate and its influence on the popular literature of the Annamites.] *Société de Géographie de Lyon et de la Région Lyonnaise, Bulletin*, **1934/1935.** p. 35–44. **NNA**—General descriptive account of the climates of Indochina, particularly of Tonkin, Annam, Cochin China and the elevated plateaux, containing no data, but noting briefly the particular elements characteristic to Indochina, such as typhoons, "crachin," and the Laos wind. Brief notes are included on relations of climate with pathology and with literature and language. *Subject Headings:* **1. Climate of French Indochina 2. Human activity 3. French Indochina.**

5B–140 551.582(593)

Credner, Wilhelm, **Siam, das Land der Tai.** [Siam, the land of the Thai.] Stuttgart, **1935. NNA**—General climatic conditions described p. 66–86 with summary tables and charts. *Subject Headings:* **1. Climate of Thailand 2. Thailand.**

5B–141 551.552

Deppermann, Charles E., **The mean transport of air in the Indian and South Pacific Oceans.** Manila, **1935.** 13 p. plus 36 plates, 2 large tables. Review in: *Geographical Review*, 26:687–688, **1936. NNA**—Writer attempts to give an idea of the air streams that approach the Philippines from the south and west, from the Indian and South Pacific Oceans. Arrows for strength and direction of air transport are plotted on maps. Besides giving trimonthly frontal differences, air stream discontinuities and typhoon origins, supplementary maps attempt a preliminary solution of the question of rainfall areas over the ocean. Other maps give the mean annual transport for the Indian and South Pacific Oceans. Tables give Indian and South Pacific resultant wind rose values. Detailed explanatory text accompanies tables and maps. *Subject Headings:* **1. Atmospheric circulation 2. Philippine Islands 3. Indian Ocean 4. South Pacific.**

5B–142 551.553.2:551.465

Great Britain. Meteorological Office, **Currents in the China Seas and East Indian Archipelago.** *Marine Observer*, 12:114–116, **1935.** 4 tables. **NNA**—Mean sets and drifts of currents have been computed to show seasonal variations. Work is primarily oceanographic, but does include small table of seasonal winds in various latitudes of the China and Eastern Seas, and notes on the effects of the monsoon periods on current variations. *Subject Headings:* **1. Ocean currents 2. Monsoons 3. China Sea 4. Indonesian Seas.**

5B–143 551.582(910)

Hacker, Helmut, **Die Klimaprovinzen von Niederländisch-Indien.** [The climatic provinces of the Netherlands Indies.] *Meteorologische Zeitschrift*, 53:146–149, **1936.** Summary of a dissertation by the author. Leipzig, **1935.** 64 p. Unchecked. **DWB**—Java is divided into 11 climatic provinces while the remainder of the region is divided into 18 provinces, shown in the plates. Rainfall in four successive driest months used as a criterion. *Subject Headings:* **1. Climatic regions 2. Precipitation 3. Indonesia.**

5B–144 551.513:551.557

Hubert, H., **Les mouvements généraux de l'air atmosphérique au-dessus des colonies françaises.** [The general air movement above some French colonies.] *Annales de Physique du Globe de la France d'Outre-Mer*, 2:1–27, 73–82, **1935.** 31 figs. **DWB**—Circulation over Africa first considered, and limits of the various upper currents discussed in light of data for Dakar, Saint-Louis, Niamey, Gao, Bangui, Yaounde, Abidjan, French Somaliland. Results given in diagrammatic form for heights up to 10 km. Attention then turned to Indochina, based on observation at Saigon, Phu-Lien, Tourane, Battambang, Hanoi, Vinh and Vientiane. Observations from Martinique, French Guiana, Saint-Pierre and Miquelon briefly discussed. In second part author deals in a similar

way with Madagascar, Reunion and French Oceania, and discusses general circulation in intertropical areas. (*Same item as* 4E–76, May 1953, *MAB*). *Subject Headings:* **1. Atmospheric circulation 2. Upper air winds 3. French Somaliland 4. French Indochina 5. French Oceania.**—*G.J.E.*

5B–145 551.582(591)(595)

Jones, W. R., **Notes on the climate of southern Burma and the Malay Peninsula.** *Royal Meteorological Society, Quarterly Journal*, 61:381–386, **1935. NNA**—Somewhat random notes are made on climate of region by geologist from four years' observations and experience living there, with some little data in text. He discusses, as well as general climatic conditions, the effect of climate on every day life and the weathering of rocks in the tropics. *Subject Headings:* **1. Climate of Burma 2. Climate of Malaya 3. Climate and man 4. Weathering 5. Burma 6. Malaya.**

5B–146 551.577.2(51)

Li, L. C., **A primary study of rainfall of Kwangsi province.** *Geographical Society of China, Nanking, Journal*, 2(4), Dec. **1935.** 15 figs. tables. In Chinese; English summary p. 16. **NNA**—Rainfall types, amount, distribution, etc. in this rainy province of South China are discussed. Thirteen rainfall regions are delineated. The controlling factors of Kwangsi rainfall are enumerated: the Siberian anticyclone, Indian cyclones, high temperatures, rugged land forms, and to a slight degree, the typhoon. Rainfall maps and data are included. *Subject Headings:* **1. Rainfall regime 2. Kwangsi Province, China.**

5B–147 551.501.9:551.43(914)

Selga, Miguel, **Mountain meteorology in the Philippines.** *Manila. Observatorio Meteorologico, Meteorological Bulletin*, 1933:267–279, **1935.** 55 refs. **GB-MO**—Descriptions of sites and conditions of 19 high-level stations, the most important of which is Baguio (1432 m) where a 24-hour rainfall of 1168 mm was recorded on July 15, 1911. There are also notes of weather on Apo, Davao (2929 m) the highest mountain in the Philippines. (*Same item as* 2K–176, in Nov. 1951, *MAB.*) *Subject Headings:* **1. Mountain meteorology 2. Mountain observatories 3. Philippine Islands.**—*C.E.P.B.*

1936

5B–148 551.582

Bruzon, E., **La période du crachin sur les régions du Golfe du Tonkin.** [The "crachin" season in the Gulf of Tonkin region.] *Annales de Physique du Globe de la France d'Outre-Mer*, 3(17):129–133, 139–142, Oct. **1936.** 7 figs. 2 tables. **NNA**—Conditions of the "crachin" or humid season of fog and drizzle and minimum temperatures, Jan.–April, are described. Association with other meteorological conditions such as Far East depressions, surface and upper winds, state of sky, etc. are noted. Tables give mean monthly numbers of "crachin" days for 6 years at several locations. Graphs give corresponding visibilities. *Subject Headings:* **1. Crachin season 2. Visibility 3. Gulf of Tonkin Region 4. French Indochina 5. South China.**

5B–149 551.577.2(596/9)

Carton, P., **Cartes pluviométriques moyennes mensuelles et annuelles, année moyenne 1907–1924, du Tonkin et Nord-Annam, de la Cochinchine et du Cambodge.** [Mean monthly and annual precipitation charts, yearly means 1907–1924 for Tonkin and North Annam, Cochin China and Cambodia.] Hanoi, **1936.** 4 p. plus 26 maps. Supplement to: *French Indochina. Service de la Statistique Générale, Bulletin Economique de l'Indochine*, **1935. DWB**—Annual and monthly rainfall maps for these two regions have been constructed using more up-to-date data and enlarging upon the maps of the BRUZON-CARTON (1930) work. *Subject Headings:* **1. Precipitation 2. Precipitation charts 3. French Indochina.**

5B–150 551.515.4(914)

Deppermann, Charles E., **Are thunderstorms around isolated island stations in the Philippines frontal?** *Philippines. Weather Bureau, Meteorological Bulletin*, Jan. **1936.** p. 13–18. 5 tables. Also as: *U. S. Air Weather Service, Report*, No. 820, **1944. DWB**—Examination of records at Basco for 1930–1935 and of air mass movements and characteristics of region indicate that thunderstorms there are frontal; yet daily convection effect of summer heat is also important. (*Same item as* H–135, Aug. 1950, *MAB.*) *Subject Headings:* **1. Thunderstorms 2. Fronts 3. Philippine Islands.**

5B–151 551.515.8(914)

Deppermann, Charles E., **Outlines of Philippine frontology.** Manila, **1936.** 27 p. map, 4 refs. **NNA**—Preliminary, brief sketch of air streams and fronts found in the Philippines and its vicinity, their positions and movement during the year, and the depressions, cyclones and typhoons that arise and move along the fronts. *Subject Headings:* **1. Frontal analysis 2. Philippine Islands.**

5B–152 551.515.8(51)

§Gherzi, E., **Air masses acting over China and the adjoining seas.** *Beiträge zur Physik der freien Atmosphäre*, 24:45–52, **1936.** 5 figs. **NN**—Author states that it is the characteristics of four main wind directions: the Siberian, the trade wind, the tropical Indochina and Tonkin, and the SW Australian and Philippines air streams which cause all weather conditions over China. Characteristics of the different types are enumerated and illustrative synoptic and schematic charts included. *Subject Headings:* **1. Air masses 2. Winds 3. China.**

5B–153 551.506.7(910)

*Indonesia. (K.) Magnetisch en Meteorologisch Observatorium te Batavia, **Pilot balloon observations made in the Netherlands Indies. 1936–.** extensive tables. Mimeo. **DWB, NNA**—Published monthly, consisting entirely of tables. Complete detailed daily observations are tabulated for different altitudes over numerous locations in the Netherlands Indies, Indonesia. Rev. in *Meteorological Magazine*, London, 72:97, **1937.** *Subject Headings:* **1. Monthly data bulletins 2. Upper air data 3. Indonesia.**

5B–154 551.542(595)

Lea, C. A., **A preliminary analysis of pressure observations in Malaya.** *Malaya. Meteorological Service, Memoir*, No. 1, [**1936**]. 8 p. plus 18 figs., table. Photostat. **DWB**—Barometric pressure measurements in Malaya are discussed; seasonal variation of pressure distribution in Malaya shown in a series of monthly maps, and variations are discussed in some detail. Table shows diurnal variation of pressure, 1932, at several stations. *Subject Headings:* **1. Atmospheric pressure 2. Malaya.**

5B–155 551.506.7(595)

*Malaya. Meteorological Service, **Pilot balloon data.** First issue, v. 1, Pt. 1, Jan. **1936;** last issue received, July **1953.** Monthly. Entirely tables. **DWB**—Data for individual ascents for a varying number of stations in Malaya with geographic coordinates of each station given. *Subject Headings:* **1. Pilot balloon data 2. Monthly data bulletins 3. Malaya.**

5B–156 551.582.2(914)

*Philippines. Observatorio Meteorológico de Manila, **Monthly meteorological data for Baguio during the year 1935 as compared with their normal values.** And . . . **Manila** . . . Manila, [**1936.**] 2 fold. sheets. **NNA**—Two sheets contain monthly and annual 1935 averages and long-period normals for the usual elements at these two locations. Length of observations period varies by element and stations, about 1910–1935 for Baguio and about 1885–1935 for Manila. *Subject Headings:* **1. Urban climates 2. Baguio, Philippine Islands 3. Manila, Philippine Islands.**

5B–157 551.582.3(265)

Netherlands. (K.) Meteorologisch Instituut, **Oceanographische en meteorologische waarnemingen in de Chineesche Zeeën het westelijk deel van den Noord Stillen Oceaan.** [Oceanographic and meteorological observations in the China Seas and in the western part of the North Pacific Ocean.] **I. Monthly charts for Jan.–June (1910–1930). II. Monthly charts for July–Dec. (1910–1930).** *Netherlands. (K.) Meteorologisch Instituut*, [*Publication*], No. 115, **1935–1936.** 46+48 p. charts. Title in Dutch and English. English text: U. S. Office of Naval Operations NAVAER 50-1R-173. **DWB, NNA**—Region covers the seas south from Japan and Korea to the equator, including seas around Formosa, China coast, Philippines, Indochina, Singapore, North Sumatra, Borneo and Celebes. Observations from ships in area for many years have been collected and analyzed. Separate charts are given for each element and each month. Contents include charts on sea currents, fog, winds, including wind roses and general circulation diagrams, precipitation, pressure, temperatures of air and sea surface, gales, typhoons and depressions. Similar to another work by the Instituut on Indian Ocean (see 5B–41 above). Explanatory text is included with the charts. (*Same item as* 4I–92, Sept. 1953, *MAB.*) *Subject Headings:* **1. Climatology 2. Oceanography 3. Marine climatic charts 4. Marine atlases 5. China Sea 6. Indonesian Seas.**

5B–158 551.582.2(265)

*Selga, Miguel, **Weather observations from ships.** Manila, **1932.** 69 p. extensive tables. Also: **Weather observations from ships in the Far East, 1933–1935.** Hanoi, **1934;** Manila, **1936.** 31 p. extensive tables. **NNA**—Observations from ships in the seas around the Philippines are published. They include: 1) wireless messages received by the Royal Observatory of Hong Kong during 1930; 2) radiotelegraphic weather reports sent by ships to Manila Observatory; 3) observations made at sea and abstracted from log books of ships. *Subject Headings:* **1. Marine climatic data 2. Ships weather messages 3. West Pacific 4. China Sea. I. Philippines. Observatorio Meteorológico de Manila II. French Indochina. Service Météorologique III. Hong Kong Royal Observatory.**

5B–159 551.506.7(593)

Thailand. Meteorological Dept., **Pilot balloon data.** Sept. 1936–1949–. sheets. **DWB.** v. 13(1–12), 1949. **DLC**—Unchecked. Data for Don Muang at first; other stations added later. *Subject Headings:* **1. Pilot balloon data 2. Monthly data bulletins 3. Thailand.**

5B–160 551.506.5(265)

*Visser, Simon Willem, **Meteorological observations.** (In: The Snellius-Expedition in the eastern part of the Netherlands East-Indies 1929–1930, under the leadership of P. M. van Riel, **Scientific Results. Vol. III.** Leiden, E. J. Brill, **1936.** 113 p. 25 figs., 2 photos, 81 tables, bibliog.) **DLC**—Discussion and considerable data on air pressure, temperature and humidity, sea surface temperature, wind, state of the sea, rainfall, thunderstorm clouds and optical phenomena including visibility and radiation. Data collected on about 33,000 miles of cruising in the waters of the East Indian Archipelago lying to the eastward of Java and Borneo in 16 months. Bibliography included. (*See also item* 5A–75, Jan. 1954, *MAB.*) *Subject Headings:* **1. Snellius-Expedition, 1929–1930 2. Expeditionary climatic data 3. Indonesia. I. Snellius-Expedition, 1929–1930 II. van Riel, P. M.**

1937

5B–161 551.582 551.576.2(914)

*Deppermann, Charles E., **The weather and clouds of Manila.** Manila, **1937.** 37 p. 100 plates, 6 tables, 6 refs. **NNA**—Author attempts to classify the weather of Manila according to various frontal situations. Scheme is outlined. He then presents a classification of weather types based mainly upon the lower clouds, and then correlates the two classifications. Included are 100 photographs of Manila clouds (selected from 5000 photographs) along with short explanation under each. *Subject Headings:* **1. Weather types 2. Fronts 3. Cloud photographs 4. Manila, Philippine Islands.**

5B–162 551.582(596)

Frolow, V., **La propagation des composantes météorologiques élémentaires en Indochine.** [Distribution of the principal meteorological elements in Indochina.] *Annales de Physique du Globe de la France d'Outre-Mer,* 4(23):153–156, Oct. **1937.** 5 figs., 3 tables p. 148–150. **NNA**—Theoretical calculation of distribution of precipitation, temperature and pressure in Indochina, accompanied by some representative data and charts. *Subject Headings:* **1. Climatology 2. French Indochina.**

5B–163 551.582(921)

Helbig, Karl, **Klima und Wetter im südlichen Batak-Land auf Sumatra.** [Climate and weather in southern Batakland, Sumatra.] *Annalen der Hydrographie und Maritimen Meteorologie,* 65:49–58, **1937.** 2 plates, 7 refs. Also: *Ibid.,* p. 163–169. **NNA**—General review of topographic and climatic regions of this part of northern Sumatra with illustrative chart and diagrams of yearly amounts of precipitation at 19 locations, given. No data are tabulated. *Subject Headings:* **1. Climate of Sumatra 2. Medical climatology 3. Batakland, Sumatra.**

5B–164 551.577.2

*Hubert, Henry, **Les précipitations annuelles dans les territoires d'outre-mer de la zone intertropicale.** [Annual precipitation in overseas territories of the intertropical zone.] *Annales de Physique du Globe de la France d'Outre-Mer,* 4(22,23):97–122; 129–133, 137–147, Aug.; Oct. **1937.** numerous figs., tables, refs. **NNA**—Regions discussed include French West and Equatorial Africa, Madagascar, Martinique, Indochina, and Reunion. In the first section numerous tables summarize as much data as was possible to collect on precipitation in these colonies along with explanation of scope, procedures, graphs and outcome of the study in general. In Sect. B (No. 23) annual rainfall curves 1905–1935 for various stations of the French colonies are plotted on small graphs, including some for Annam, Cambodia, Cochin China, Laos, Tonkin, republics of Indochina. *Subject Headings:* **1. Precipitation 2. French Indochina 3. Africa.**

5B–165 551.506.1(51)

*Lingnan University, Canton, China. Freeman Meteorological Observatory, **Daily Meteorological Records, 1919–1937.** **DWB**—Daily observational data of the usual elements, issued quarterly. *Subject Headings:* **1. Observational data 2. Monthly data bulletins 3. Canton, South China.**

5B–166 551.582(59,91):656.4

Malaya. Meteorological Service. **Weather conditions along air routes in the neighbourhood of Malaya.** Singapore, **1937.** 20 p. map. **GB-MO**—Some general characteristics of the region are described, and frequency and locality of cyclones in Bay of Bengal and China Sea are tabulated.

Seasonal weather, winds, low cloud and visibility are summarized for 14 air routes covering the area. Calcutta–Port Darwin–Philippines–Hong Kong. *Subject Headings:* **1. Airways climatic data 2. Aeronautical climatology 3. Visibility 4. Southeast Asia 5. Malaya.**—*C.E.P.B.*

5B–167 551.506.1(593)

*Thailand. Meteorological Dept., **Monthly Meteorological Bulletin, 1937–.** (Suspended during part of the war.) Irrigation Dept. issued two titles from Jan.–July 1936: *Summary of meteorological observations made at Rangsit Meteorological Observatory* and *Summary of meteorological observations made at Chiengmai*, which were consolidated under the Hydrographic Service, Sect. of Meteorology. From April 1937, the combined publication took the above title. Last issue received, v. 15, No. 4, April **1950.** mostly tables. **DWB**—Daily and hourly observational data for the usual elements at Bangkok and monthly means for 38 other stations of Thailand are published in this monthly series, along with notes on methods, procedures, instruments, etc., and a brief descriptive summary of each month's weather. *Subject Headings:* **1. Climatic data 2. Monthly data bulletins 3. Thailand.**

5B–168 551.582(265)

*U. S. Hydrographic Office, **[Naval air pilot.] Part I. Climatic features of the Philippines Island region.** Prepared by U. S. Weather Bureau, Wash. **[1937].** 8 p. 21 charts, 7+tables. H.O. No. 185. **DWB**—Region includes area around Philippines from the Equator to Formosa. A thorough survey of climatic conditions of region is made, including surface and upper wind roses and data, visibility conditions, cloud frequencies, typhoon occurrences and tracks, etc. Climatic data are tabulated, p. 48–67, for numerous stations of the Philippines, three Formosa stations, Hong Kong, Nhatrang (Indochina), and for 5° squares throughout the region-land and sea areas. *Subject Headings:* **1. Climate of Philippine Islands 2. Climatic data 3. Philippine Islands 4. Southeast Asia 5. West Pacific. I. U. S. Weather Bureau.**

1938

5B–169 551.526.6(910)

*Berlage, H. P., Jr., **Sea-surface temperatures on some steamer routes in the Malay Archipelago.** *Indonesia.* (*K.*) *Magnetisch en Meteorologisch Observatorium te Batavia, Verhandelingen*, No. 21, **1928.** 54 p. extensive tables, refs. **NNA.** Also: . . . **second series 1928–1932.** *Ibid.*, No. 25, **1933.** extensive tables. **NNA.** And: Schregardus, M. W. F., . . . **third series 1933–1937.** *Ibid.*, No. 28, **1938.** 35 p. extensive tables. **NNA**—Results of systematic sea-surface temperature observations on board several ships on regular service throughout the East Indies, are given. Observations are conducted with a special view to tracing connections between sea-surface temperatures and weather in the insular area. Therefore, routes are selected crossing the seas along lines where detection of temperature variations could be supposed to yield most valuable help in long range forecasting. Routes are: Singapore–Pontianak (W. Borneo); Soerabaja (Java)–Bandjermasin (S. Borneo); Bima (Sumbawa)–Makassar (S. Celebes); Balikpapan (E. Borneo)–Donggala (Central Celebes); Menado (N. Celebes)–Ternate (Moluccas). *Subject Headings:* **1. Sea surface temperatures 2. Climatology 3. Malay Archipelago. I. Schregardus, M. W. F.**

5B–170 551.588.6(59)

Carton, P. and Sallenave, P., **Considérations sur l'action réciproque des fôrets et du climat.** [Interaction of forest and climate.] *French Indochina. Service de la Statistique Générale, Bulletin Économique de l'Indochine*, 41:293–319, **1938.** 5 photos. Photostat. **DWB**—Works of the past century (Hann, Klein, Sanson, Braak and others) on influence of vegetation on rainfall, are reviewed and application of ideas to conditions in Indochina cited. It is concluded that forests are valuable in themselves, they protect soil and soil moisture, humidity and the microclimate in the immediate vicinity, and have little effect on the climate as a whole or on rainfall; they do affect ceiling height, turbulence, visibility and fog. Microclimatic data obtained in and outside of a forested area for the years 1933–37, are tabulated, showing the difference. The effect of climate on vegetation, and of vegetation on soil and on runoff is also considered in detail. (*Same item as* 4.3–280, March 1953, *MAB.*) *Subject Headings:* **1. Forest influences 2. Microclimatology 3. French Indochina.**—*M.R.*

5B–171 551.582(02)(265)

*Great Britain. Hydrographic Office, **China Sea Pilot.** 5 v. London, **1926–1938.** Also: U. S. Hydrographic Office, **Sailing directions for Celebes, southeast Borneo, Java, . . .** Washington, D. C., **1935.** And: . . . **for Sunda Strait and Northwest coast of Borneo . . .** Washington, D. C., **1934.** And: . . . **for Malacca Strait and Sumatra . . .** Washington, D. C., **1933. DWB**—All volumes of the "China sea pilot" include some section of the China Sea bordering the Philippines,

East Indies, Southeast Asia, Southern China or Formosa. Each volume contains notes on meteorological conditions and meteorological tables appended. Each volume indexed. Meteorological data in the "Sailing directions" are similar to British. *Subject Headings:* **1. Marine pilot guides 2. Climatic data 3. West Pacific 4. China Sea 5. Indonesian Seas 6. Southeast Asia. I. U. S. Hydrographic Office.**

5B–172 551.582(265) 551.506.1(596/9)

†*§Great Britain. Meteorological Office, **Weather in the China Seas and in the western part of the North Pacific Ocean.** Vol. I. Part 1. **General information.** Part 2. **Typhoons.** Vol. II. **Local information.** Vol. III. **Aids to forecasting.** London, 1937, 1938. **MH-BH**—Region includes all the ocean and coastal area from Malacca Strait and the equator north to the Okhotsk Sea, taking in the northern sections of the East Indian Archipelago, the Philippines, Southeast Asia and China Sea, the coasts of China, Korea, Japan and Russian Maritime Province, as well as the various Pacific islands. Vol. I, Pt. 1 (165 p. 42 figs., 16 refs.) contains chapters on general information about the region: orographic features and general weather conditions, seasonal and daily weather changes, equatorial and middle latitude contrasts; normal distribution of pressure and its seasonal changes, the Siberian HIGH, Aleutian LOW, pressure over North Pacific, northern India and Australia, seasonal variations and related geostrophic winds, cyclonic depressions; gales and squalls; wind in the upper air, general circulation, seasonal conditions; sea temperature and ocean currents; air temperatures, rainfall, cloudiness, fog and visibility, and thunderstorms. Climatic charts, tracks of cyclonic depressions, synoptic charts, wind roses—surface and upper isohyets, etc. are included, but no important data in this section. Vol. I, Pt. 2 (45 p. 12 figs., 22 refs., plus 47 plates) deals with typhoons in the region. Warnings of approach and sequence of wind and weather are discussed as well as theories of birth and death of tropical cyclones; zones of origin of typhoons and seasonal changes in position; synoptic indications of formation; filling up of typhoons; danger area and paths and frequency in different areas; movements; height, upper air currents in the vicinity of typhoons; and single observer forecasting. Numerous exemplary synoptic charts with explanatory notes on the various typhoon conditions are appended. In Vol. II "Local information" (771 p. 211 figs., 43 tables, 207 refs.) weather of particular local regions pertinent to the present bibliography is discussed in various sections as follows: Pt. 1, The Malacca Strait including the west coast of Malay Peninsula and northerly coasts of Sumatra, with appendix on Singapore; Pt. 2A, China Sea south of 10°N, including the Gulf of Siam, east coast of Malay Peninsula, coast of Thailand, southwest coast of Indochina; 2B, northwest coast of Borneo; Pt. 3, Central China Sea, Gulf of Tonkin, east coast of Indochina and Hainan; Pt. 4, China Sea north of 20°N and Formosa Strait, including the southeast coast of China, Hainan to Foochow and Formosa, with an appendix for Hong Kong; Pt. 9, Philippine Islands and the Sulu Sea; Pt. 10, the Celebes Sea, including the north coast of Celebes, northeast coast of Borneo. The weather summary for each part includes general considerations of climate and then separate discussion of the particular elements: wind, surface and upper; visibility; cloud; rain and hail; temperatures of air and sea; humidity; thunderstorms, squalls, waterspouts, and swell; as well as typhoons and depressions for some areas. Climatic data, wind roses, and other schematic charts are included in each part. References are listed by region and subject at end of volume. Vol. III, "Aids to forecasting," including supplement on single observer forecasting (170 p. fig., 121 plates (synoptic charts), 16 refs.) summarizes information available on forecasting in the region of the China station, excluding typhoons (which are covered in Vol. I, Pt. 2). Pt. 1, here discusses briefly the main types of air over East Asia and the western North Pacific with some general remarks on forecasting north and south of parallel 25°N. Air masses are classified into polar, tropical and equatorial, with summer and winter, continental and maritime differences noted. In the section on forecasting south of 25°N two areas are considered: the north part of China Sea and regions south of 20°N, the Philippines and Malay Peninsula. Summer and winter characteristics are noted. Pt. 2 consists of synoptic charts arranged in 19 series, each of which illustrates conditions for a particular weather sequence within a limited region; along with explanatory notes. It is noted that due to the region's vastness and relative infancy in forecasting techniques it has only been possible to deal with the subject of forecasting somewhat superficially. *Subject Headings:* **1. Climatic data 2. Weather forecasting 3. Typhoons 4. Winds 5. Upper air winds 6. Sea temperatures 7. Ocean currents 8. Visibility 9. China Sea 10. Northern Indonesia 11. Philippine Islands 12. Micronesia 13. Southeast Asia Coast 14. East Asia Coast.**

5B–173 551.506.1:551.577.2(910)

*Indonesia. (K.) Magnetisch en Meteorologisch Observatorium te Batavia, **Regenwaarnemingen in Nederlandsch-Indië.** [Rainfall observations in the Netherlands Indies.] Vol. 1–63, 1879–1941 (publ. 1880–1942). **DWB**—Detailed tables give location and altitude of each station as well as rainfall observations at each, monthly and annual values, number of rain days, maxima,

variations, etc. (*Same item as* 2B–152, Feb. 1951, *MAB.*) *Subject Headings:* **1. Precipitation data 2. Annual meteorological reports 3. Indonesia.**

5B–174 551.509.33:551.513.7

Iyer, V. Doraiswamy, **Foreshadowing formula for the monsoon rainfall of Upper Siam.** *Royal Meteorological Society, Quarterly Journal,* 64(275):342–344, April **1938.** fig. **DWB**—Check of previous formula with 10 years' subsequent data proved unsatisfactory. A new regression formula is obtained from preceding pressures in South America, Central Siberia and Honolulu and rainfall in South Rhodesia. The multiple correlation of .81 is significant by Fisher's test. (*Same item as* 2B–152, Feb. 1951, *MAB.*) *Subject Headings:* **1. Long range forecasting 2. Correlations 3. Thailand.**—*C.E.P.B.*

5B–175 551.506.1(51)

*Lingnan University, Canton, China. Freeman Meteorological Observatory, **Monthly Meteorological Bulletin.** v. 1, 1935–v. 4(2), Feb. **1938.** In Chinese and English. **DWB**—Daily observations are tabulated along with schematic diagrams and brief explanatory comments. *Subject Headings:* **1. Monthly data bulletins 2. Observational data 3. Canton, China. I. Canton. Freeman Meteorological Observatory.**

5B–176 551.582:631.4(910)

Mohr, E. C. J., **Climate and soil in the Netherlands Indies.** *Colonial Institute, Amsterdam, Bulletin,* 1(4):241–251, Aug. **1938. NNA**—Bad effects of the abundant tropical rainfall on the soils of the Netherlands Indies are described; the only natural regeneration of this soil comes from volcanoes. Author points out the challenge to agricultural science involved. *Subject Headings:* **1. Agricultural climatology 2. Soil conservation 3. Indonesia.**

5B–177 551.577.2(914)

*Selga, Miguel, **Observations of rainfall in the Philippines.** Manila, **1935.** 289 p. 118 plates, extensive tables. And: **Supplement No. 1.** Manila, **1938.** 96 p. map (fold.), extensive tables. **NNA**—All observations of rainfall made at the main weather stations of the Philippines from the beginning of the Philippines Weather Bureau to the end of 1933 are given. Period covered varies from 2 years at Argao, Cebu, to 69 years at Manila. An alphabetical index to stations is included as well as rainfall graphs showing monthly amount of rain and rainy days for each station. Supplement No. 1 brings this series of rainfall observations up to 1937. No graphs are included, but a rainfall map shows detailed precipitation values for 58 stations of the islands. *Subject Headings:* **1. Precipitation data 2. Philippine Islands. I. Philippines. Weather Bureau.**

1939

5B–178 551.582(95)

Challis, B. G., **Climatic notes on New Guinea.** *New Guinea Agricultural Gazette,* 5(3):8–27, Dec. **1939.** map, tables. **DWB**—A general description of the climate of New Guinea includes discussion of sea and land breezes, southeast trades, northwest monsoon regimes, etc., the change-over season, pressure, humidity and cloudiness. Data for selected stations at sea level and in the interior are given, mainly for 1948. *Subject Headings:* **1. Climate of New Guinea 2. New Guinea.** —*I.L.D.*

5B–179 551.506.1(596/9)

*French Indochina. Service Météorologique, **Annales. 1928–1939.** charts, tables. **NNA, DWB**—Volumes for consecutive years have slightly varying scope and contents. All contain summary text on the general climatic pattern of the year; charts and notes on typhoons and depressions in the China Sea; lists and locations of meteorological stations; and extensive climatic data tabulated as monthly and annual values for the numerous stations. Earlier issues contain folded rainfall charts. Later issues contain more extensive and detailed data. *Subject Headings:* **1. Climatic data 2. Annual meteorological reports 3. French Indochina 4. China Sea.**

5B–180 551.582.2(265)

*Kobe, Japan. Imperial Marine Observatory, **The mean temperature, cloudiness and sea surface temperature of the North Pacific Ocean and neighbouring seas for the year . . . 1916–1938.** Kobe, 1925–1939. Title varies. tables. **NNA**—Annual publication (except first in series which covers 5 years, 1916–1920) contains averages of air temperature, amount of cloud and sea surface temperature for each one-degree square of the South China Sea, Yellow and Eastern Seas, Japan Sea and west parts of the North Pacific Ocean, etc. Data are taken from meteorological logs of Japanese merchant marine. *Subject Headings:* **1. Marine climatic data 2. Annual meteorological reports 3. South China Sea 4. West Pacific 5. North Pacific.**

5B–181 551.582(914)

Philippines. Weather Bureau, **Climate of the Philippines.** Manila, **1939.** 31 p. 10 plates, 4 tables. **NN**—Four climatic types found in the archipelago, are defined, described and seen to depend mainly on the local air currents which in turn are a resultant of the general air streams, position of the islands, and the most usual storm tracks. The different climatic types are illustrated by curves of monthly variations of the usual elements and by tables of rainfall data for different locations and periods. *Subject Headings:* **1. Climate of Philippine Islands 2. Philippine Islands.**

5B–182 551.513 551.587(54)

*Ramanathan, K. R. and Ramakrishnan, K. P., **The general circulation of the atmosphere over India and its neighborhood.** *India. Meteorological Dept., Memoirs,* 26(10):189–245, **1939.** 74 plates, numerous tables, 22 refs. **NNA**—"Neighborhood" includes most of Burma. Paper gives charts of mean air movement in each month over the India region at different heights up to 8 km. Charts of movement of low, medium and high clouds given for five months. Upper air temperatures deduced from change of wind with height are charted. Lower level charts contain wind roses. Upper wind and temperature distribution are described by month, and their relations to monsoons and storms, etc. pointed out. Tables of resultant and predominant winds as well as frequencies of cloud movement are appended. *Subject Headings:* **1. Atmospheric circulation 2. Cloud movement 3. Upper air winds 4. Upper air temperatures 5. Winds 6. India 7. Burma.**

5B–183 551.515.2 551.515.8(51)

Yao, C. S., **Die stationären Fronten und die Seebassin Zyklonen in der Chinesischen "Mai-U" Periode.** [Stationary fronts and cyclones from the sea in the Chinese "Bai-U" period.] *Zeitschrift für angewandte Meteorologie,* 56:213–218, **1939.** 2 figs., table, 2 refs. **NN**—Brief analysis of air mass and frontal conditions at the time of the "Bai-U" or secondary rainy season in middle and South China, with two schematic charts showing typical fronts and air masses over the region. *Subject Headings:* **1. Bai-u 2. Air masses 3. Fronts 4. South China 5. China.**

1940

5B–184 551.577.2(910)

Braak, Cornelius, **Over de oorzaken van te tijdelijke en plaatselijke verschillen in den neerslag.** [On the causes of the temporary and local differences of precipitation.] *Netherlands. (K.) Meteorologisch Instituut, Mededeelingen en Verhandelingen,* No. 45, **1940.** 57 p. 6 figs., tables, refs. German translation p. 36–57. **NNA**—Contents include consideration of daily course of rainfall at land stations, in sea and coastal regions, night and day maxima and minima, particular effects of temperature and wind. *Subject Headings:* **1. Precipitation variations 2. Indonesia.**

5B–185 551.582 551.515.2

*§Bruzon, E. and Carton, P., **Le climat de l'Indochine et les typhons de la Mer de Chine.** [The climate of Indochina and the typhoons of the China Sea.] Hanoi, **1930.** 310 p. numerous charts (fold.), diagrs., photos, tables, refs. 3rd ed., **1940** (with additional references and sections on various elements and climatic summaries, and a chapter devoted to the influence of climate upon forests, vegetation, etc.) **NNA, DWB**—These editions appear to be the most exhaustive works available on the subject. Pt. 1 in 1930 ed. deals with climate (p. 15–260). Pt. 2, with typhoons. Contents of the first include a review of the meteorological and climatic network of Indochina, including photos and maps of locations; a summary of the country's geography, topography, etc.; its general meteorological set-up in the world; and then detailed discussions of the usual climatic elements including fog, mists, evaporation, insolation, nebulosity, atmospheric disturbances, etc. Many illustrative and detailed data up to 1926, charts and graphs accompany the discussions. Monthly, annual and seasonal wind roses for numerous stations are appended. The second part consists of extensive treatment of typhoons in the China Sea, with diagrams graphs, photos, and synoptic charts. Contents include discussion of research and theories on cyclones and typhoons; consideration of formation zones, frequencies and trajectories of China Sea typhoons; their structure, with synoptic charts; their destructive effects including descriptions of several individual storms; and the organization of a warning service, stations, signals, symbols, etc. *Subject Headings:* **1. Climate of French Indochina 2. Typhoons 3. French Indochina 4. China Sea. I. Romer, A.**

5B–186 551.506.1(05)(591)

*Burma. Meteorological Dept., **Burma Monthly Weather Review.** Jan. **1938**–Sept. **1940.** extensive tables. **DWB**—Contents of each monthly issue of this periodical consist of three sections: 1) weather summary and abstract of observations; 2) pilot balloon data; 3) monthly frequency of winds, visibility and height of base of low cloud at pilot balloon stations. *Subject Headings:* **1. Climatic data 2. Upper air data 3. Monthly data bulletins 4. Burma.**

5B–187 551.576.3 (914)

Deppermann, Charles E., **Some interesting types of Manila clouds.** Manila, **1940.** 8 p. Also in: *American Meteorological Society, Bulletin,* 21(2):45–46, Feb. **1940.** 10 refs. **MH-BH**—Resumé of paper presented to I.G.G.U. Assembly, Wash. 1939. Lecture on cloud types at Manila accompanied showing of slides of such. *Subject Headings:* **1. Clouds 2. Manila, Philippine Islands.**

5B–188 551.557:551.513

†§Deppermann, Charles E., **Upper air circulation (1–6 km.) over the Philippines and adjacent regions.** Manila, **1940.** 64 p. 60 figs., map (fold.), 31 refs. **NNA**—The main air streams from 1 to 6 km in the region of the Philippines are kinematically analyzed month by month, including the area from Burma to Guam and New Guinea, and from north Formosa to north Australia. Charts are given showing the mean extent, direction and force of each of these air streams at the surface and aloft for Jan., April, July and Oct. Upper air circulation in typhoons of the Philippines area for 1938 and 1939 is studied in some detail, and its complexity brought out. Influences of different air streams on developments of depressions and typhoons are considered. *Subject Headings:* **1. Upper air winds 2. Atmospheric circulation 3. Typhoons 4. Philippine Islands 5. West Pacific.**

5B–189 551.582

Dobby, E. H. G., **Singapore: town and country.** *Geographical Review,* 30:84–109, **1940.** Climate, p. 91–93. fig. **NNA**—Brief description given of the distinctive features of the local climate: rain and temperature, effect of Intertropical Front, winds, thunderstorms, etc. A diagrammatic representation of some features of Singapore's weather included. *Subject Headings:* **1. Climate of Singapore 2. Singapore.**

5B–190 551.582 (591)

†*Great Britain, Meteorological Office, **The coast of Burma.** (In its: **Weather in the Indian Ocean.** v. 2, Pt. 1. London, **1940.** 140 p. 34 figs., 8 tables+, 78 refs. I.M.O. 451.) **DWB**—Contents include a summary of general weather characteristics of the Burma coast region, and more detailed treatment of particular elements: depressions and tropical cyclones; winds, surface and upper; visibility; cloud; rain and hail; temperature; humidity; thunderstorms, waterspouts, sea conditions, etc. The work is well illustrated with diagrams, charts, surface and upper wind roses, and tables of general climatic conditions, winds, visibility and sea conditions. *Subject Headings:* **1. Climate of Burma 2. Climatic data 3. Tropical cyclones 4. Winds 5. Upper air winds 6. Visibility 7. Burma Coast.**

5B–191 551.586:58

Holttum, R. E., **The uniform climate of Malaya as a barrier to plant migration.** *Pacific Science Congress, Sixth, Berkeley, California,* 1939, *Proceedings,* v. 4:669–671, **1940. NNA**—Brief summary of general lack of seasons in Malaya is made; concluded that such climatic conditions form a barrier to natural dispersal of many plants which are adapted to a seasonal climate. Several botanical examples are included. *Subject Headings:* **1. Climatology 2. Bioclimatology 3. Plant migration 4. Malaya.**

5B–192 551.582.2 (95)

*New Guinea. Dept. of Agriculture, **Meteorological data for Rabaul.** *New Guinea Agricultural Gazette,* Rabaul, 2(1):31, **1936;** 3(1):27, **1937;** 4(3,4):23; 58, **1938;** 5(3):8, **1939;** 6(3):41–42, **1940.** Unchecked except 1940. McConnell, R. J., **Meteorological notes.** *Ibid.,* 6(3):40–41. **DWB**—General climatic data for preceding year given. Notes refer to previous years' data as listed here. *Subject Headings:* **1. Climatic data 2. Urban climates 3. Rabaul, New Guinea. I. McConnell, R. J.**

5B–193 551.582.2 (914)

Philippines. Weather Bureau, [**Maps.**] (In: Philippines. Commission of the Census, **Census atlas of the Philippines. 1940.** numerous maps.) **NNA**—Four meteorological maps are contained: 1) Climatic map, showing four climatic types; 2) Frequency of rainfall in the Philippines; average monthly conditions for various sections, one map for each month; 3) Amount of rainfall in the Philippines; average monthly conditions for various sections (12 maps, one for each month); 4) Tracks of remarkable typhoons affecting the Philippines during the 36 years 1903–1938 (12 maps, one for each month). "Remarkable typhoons" are considered those with barometric minimum below 745 mm. *Subject Headings:* **1. Climatic charts 2. Precipitation 3. Typhoons 4. Philippine Islands.**

5B–194 551.582 (02) (914)

*U. S. Coast and Geodetic Survey, . . . **United States coast pilot Philippine Islands . . .** 3rd (1939) ed. Wash., D. C., **1940.** 2 parts. **DWB**—Included, as well as sailing directions, are

meteorological tables for different stations "compiled by the Philippines Weather Bureau" from varying periods of observation (in Pt. 1, p. 534–538; in Pt. 2, p. 515–520). *Subject Headings:* **1. Climatic data 2. Marine pilot guides 3. Philippine Islands.**

1941

5B–195 551.577.2(591)

*Burma. Meteorological Dept., **Statement showing the monthly and annual rainfall at rain-recording stations in Burma for the year . . . 1938, 1939, 1940.** Rangoon, 1939–1941. tables. **NNA**—Rainfall statistics, number of rainy days, and total inches for each month and year, plus normal values, are tabulated for some 40 stations of Burma for each of these years. *Subject Headings:* **1. Precipitation data 2. Burma.**

5B–196 551.582(91/7)

*Dwyer, R. E. P., **Rubber production in New Guinea and Papua.** *New Guinea Agricultural Gazette*, 7:169–198, **1941.** tables. **NNM**—Small section in general article on rubber production includes annual rainfall, 1913–1925 (p. 171–175), for Papua tabulated for various stations, monthly averages for 11 stations in Papua, rainfall averages, 1928–1940, for various stations in New Guinea, and very brief notes on air and earth temperatures and on seasonal winds. *Subject Headings:* **1. Precipitation data 2. Agricultural climatology 3. New Guinea 4. Papua Territory.**

5B–197 551.589.5:551.515.8(51)

*Heywood, G. S. P., **Upper temperatures and the properties of air masses over Hong Kong.** Appendix B to *Hong Hong. Royal Observatory, Meteorological Results*, 1940. Hong Kong, Royal Observatory, **1941.** 14 p. 5 plates, 13 tables, 10 refs. **NNA**—Results of 646 meteorological flights over Hong Kong, 1926–1940, are analyzed. Monthly mean upper air temperatures, lapse rates, minimum freezing level and upper air humidities are calculated. Chinese air masses are classified and the types discussed. Monthly mean lapse rates, temperature/altitude curves, humidity/altitude curves, direction of principal air masses reaching China, and mean tephigrams for different air masses are appended. *Subject Headings:* **1. Upper air temperatures 2. Upper air humidity 3. Air mass climatology 4. Hong Kong. I. Hong Kong. Royal Observatory.**

5B–198 551.506.1

*Hong Kong. Royal Observatory, **Daily weather report.** June 1928–Jan. **1941.** Microfilm. **DWB**—Daily observational data. To be resumed when Observatory is rehabilitated. *Subject Headings:* **1. Observational data 2. Daily weather bulletins 3. Hong Kong.**

5B–199 551.506.7:629.13(265)

*Houghton, Walter C., **Flying conditions and air mass characteristics in the Guam–Manila–Hong Kong sector during 1939.** *Pan American Airways, Inc., Pacific Div., Meteorological Dept., Report*, No. 10, Jan. 20, **1941.** 45 p. 38 tables. **DWB**—Report shows results of one year's work on the Guam–Manila–Hong Kong Research Program of Pan American Airways. Its purpose is to derive some practical aids for more accurate forecasting at Manila, especially in typhoon season. Tabulated data from over 120 vertical soundings accomplished in 1939 by Pan American Airways planes equipped with meteorographs are given. Chief characteristics of trades (T_m air) and steady SW winds (E_m air) compared. Flights were not made often enough to pick out daily fluctuations in properties of air stream. No flights went above 3.5 km. (*Same item as* 4I–128, Sept. 1953, *MAB.*) *Subject Headings:* **1. Aeronautical climatology 2. Air masses 3. Upper air data 4. Weather forecasting 5. Guam 6. Manila, Philippine Islands 7. Hong Kong.**

5B–200 551.582.2

*Kobe, Japan. Imperial Marine Observatory, [**Appendix to: Military Weather Data. Part 4. Burma, Malaya, Netherlands Indies.**] [April **1941?**] extensive tables, refs. In Japanese. **DWB, DLC**—Monthly climatic tables, including wind, visibility and cloud height for numerous stations of Burma, Thailand, Indochina, Malaya and Indonesia. *Subject Headings:* **1. Climatic data 2. Southeast Asia 3. Indonesia.**

5B–201. 551.506.1(95)

*Papua, Territory of. Meteorological Service, **Annual summary of meteorological observations.** Excerpted from: **Annual Report of the Territory of Papua, 1934/35–1940/41.** **NNA**—Annual means of observations of usual elements at some 20 stations of Papua are tabulated briefly in each year's annual report, 1934–1941. *Subject Headings:* **1. Climatic data 2. Annual meteorological reports 3. Papua Territory, New Guinea.**

5B–202 551.506.1 (593)

*Thailand. Meteorological Dept., **Annual meteorological bulletin.** v. 1–5, **1937–1941.** 133 p. in v. 5 (pub. 1947). In Thai and English. **DWB**—List of stations and coordinates, summary of weather conditions for the year (temperature, humidity, rainfall, thunderstorms, sunshine, wind and pressure), tables of monthly means, extremes or frequencies of usual meteorological elements at selected stations in Thailand for 4 to 8 observations a day, also data on visibility, cloudiness, evaporation (Piché); hourly values of pressure, temperature, humidity, rainfall; and appended charts showing monthly wind roses for many stations, isohypses for Thailand and Malaya. *Subject Headings:* **1. Climatic data 2. Annual meteorological reports 3. Thailand.**—*M.R.*

5B–203 551.506.1:551.506.7:551.591 (598)

*Thailand. Meteorological Dept., **Monthly frequency tables of horizontal visibility, surface and upper winds.** Jan. **1938**–Sept. **1941.** 1 v. per month. 18 p. per v. **DWB**—Frequency tables summarizing 0000 and 0600 G.M.T. observations of visibility within specified limits and surface wind by direction and velocity groups for 16 stations in Thailand. Upper wind frequencies for 4 stations are given for the 2300 and 0500 observations for 500, 1000, 2000 and 3000 m for 5 velocity groups. (*Same item as* 3I–137, Sept. 1952, *MAB.*) *Subject Headings:* **1. Visibility frequencies 2. Wind data 3. Upper air wind frequencies 4. Monthly data bulletins 5. Thailand.**—*M.R.*

5B–204 551.582.2 (94,5)

*Tokyo. Toa Kenkyu-sho [Tokyo. East Asian Research Institute], **Toa kisho shiryo; Dai shichi chosa iin-kai hokokusho.** [Material on the climate of eastern Asia; Report of the Seventh Survey Committee.] v. 2, [**Philippines, French Indochina, Thailand, Burma, Malay and India.**] Nov. **1941.** v. 3, [**Netherlands, East Indies and Australia.**] Dec. **1941.** tables, charts. Many place names in Latin characters. **DWB**—In Vol. 2, monthly and annual mean temperature, precipitation, surface wind (8 directions) and speed, etc. are given in tables for over 100 stations in the Southeast Asia area. In addition actual monthly and annual values are given for a number of stations for the entire period of record. Charts show location of stations, tracks of typhoons during each year (1928–1939), rainfall and temperature distribution. Vol. 3, gives the same information for the East Indies and Australia (several hundred stations) and in addition upper air winds (16 directions) for 17 stations. Text is in Japanese. *Subject Headings:* **1. Climatic data 2. Upper air wind data 3. Southeast Asia 4. Australia 5. Indonesia. I. Okada, Takemasic** (*ed.*).—*M.R.*

1942

5B–205 551.509.33:551.513.7

Po E, Maung, **The foreshadowing of the rainfall of Burma.** *Royal Meteorological Society, Quarterly Journal*, 68:217–228, **1942.** 6 figs., 7 tables, 8 refs. Review in: *American Meteorological Society, Bulletin*, 23:372–374, **1942.** **DWB**—Statistical study is made of Burma rainfall during period June to Aug. in relation to world weather, and the results are applied to seasonal forecasting on the lines of WALKER. Burma is divided into five rainfall regions and the correlation coefficients between the rainfalls of these regions and the pressure, temperature and rainfall in other parts of world are evaluated. (*Same item as* 2B–174, Feb. 1951, *MAB.*) *Subject Headings:* **1. Precipitation forecasting 2. Long range forecasting 3. Correlations 4. Burma.**—*Author's abstract.*

5B–206 551.582

*U. S. Weather Bureau, **Climate and weather of southeastern Asia. Part I. India, Burma and southern China. Part II. Farther India and the Netherlands East Indies.** *U. S. Air Forces. Weather Div., Publications of the Weather Research Center*, v. 5(3); *U. S. Office of Naval Operations, NAVAER* 50-1R-36 and 50-1R-37, **1942.** 2 v. charts, diagrams, tables. v. I. **DLC.** v. II, unchecked.—In Pt. I a summary of the climate of Burma is made (p. 53), of southern China (p. 54). Work is arranged by regions and although this volume deals primarily with India fairly extensive consideration of bordering regions is included, that is, on charts, in climatic tables (from 12 Burma, 5 Malaya and 25 southern China stations), and in reviews and discussions of the various climatic elements. Monsoons, seasons, visibility, upper air conditions, local storms, typhoons, cloudiness and ceilings, as well as the usual elements, are taken up by regions, and liberally illustrated by charts, wind roses and data. No bibliography given in this section. *Subject Headings:* **1. Climatic data 2. India 3. Burma 4. Malaya 5. South China 6. Indonesia.**

1943

5B–207 551.582:656.71

Australia. Meteorological Service (R.A.A.F.), **Meteorological conditions at enemy aerodromes throughout S.W.P.A.** *Allied Air Forces, Hdq. Southwest Pacific Area, Directorate of Intelligence,*

Central Interpretation Unit, Objective Folder No. 76, **1943.** unpaged fold. map. Supplement to this paper issued as: *Australia. Meteorological Service (R.A.A.F.), Research Report,* Ser. 7, No. 13. **DWB**—Notes on seasonal characteristics and brief summary data and notes on winds, surface and upper, and other climatic conditions including low cloud, visibility, tropical cyclones, thunderstorms, etc. are included for numerous Japanese (during war) stations in islands of the southwest Pacific including locations throughout the East Indies. *Subject Headings:* **1. Climatology 2. Indonesia 3. Southwest Pacific Islands.**

5B–208 551.515.8(95)

§Australia. Meteorological Service (R.A.A.F.), **The north-west monsoon front in the New Guinea area.** *Australia. Meteorological Service (R.A.A.F.), Research Report,* Ser. 10, No. 14, Dec. **1943.** Including: S. L. Everist, **Notes on the northern front in New Guinea.** And comments by J. L. Williams. 11 p. 6 figs., 2 refs. **DWB**—Meteorologists' views on the existence of a northwest monsoon front, Dec.–March, in the New Guinea area are collectively presented with comments on differences and agreement in their respective concepts of the frontal structure and weather characteristics. Illustrative synoptic situations are charted. The section of the front and different topographical effects are discussed, as well as weather associated with the front, etc. *Subject Headings:* **1. Fronts 2. Frontal analysis 3. Monsoons 4. New Guinea Area. I. Everist, S. L. II. Williams, J. L.**

5B–209 551.589 551.515.8(265)

Gibbs, W. J., **Synoptic analysis over the tropical Southwest Pacific area.** *Australia. Meteorological Bureau, Bulletin,* No. 30, **1943.** 23 p. 13 figs., 17 refs. **NNA**—A broad and preliminary outline is given after three years' study of daily synoptic situations over the area bounded by the Equator, Tropic of Capricorn and 110th and 165th meridians E. Some hypothetical synoptic situations are illustrated, but no actual synoptic charts of the region are included. Sections consider: technique of analysis, anticyclones of Pacific and Indian Oceans, effect of advection in upper air on surface pressure, relation between upper wind patterns and anticyclone behavior, relations between wind and pressure fields in low latitudes, weather conditions in air streams over land masses, tropical and intertropical fronts, depressions and tropical cyclones, monsoon seasons and doldrum periods. *Subject Headings:* **1. Synoptic studies 2. Indonesia 3. Australia 4. Southwest Pacific.**

5B–210 551.582(910:265):656.6

*Great Britain, Hydrographic Dept., **Eastern Archipelago Pilot. Vol. 3. Including the northeastern end of Celebes, Molucca, Ceram, Banda and Arafura Seas, and the western end and southern coast of Netherlands New Guinea.** 4th ed. London, **1943.** 282 p. Meteorology, p. 11–22. Meteorological tables, p. 23–25. **DLC, GB-MO**—Charts of isobars for Jan. and July, and sea temperatures for Feb. and Aug. are given on plate facing p. 10. *Subject Headings:* **1. Marine climatic data 2. Indonesian Seas.**

5B–211 551.582.3(54)

India. Meteorological Dept. **Climatological atlas for airmen.** Poona, Pub. by the Govt., **1943.** 100 p. mostly charts. refs. and sources in text, p. III–IV. "Companion volume to India's climates: Summary for Airmen," pref. p. i. Price: Re 5–2. **DWB**—Charts were selected from "Climatic charts of India and neighborhood for meteorologists and airmen" which was issued in a very limited edition by the Meteorological Dept. of India. New charts of number of rainy days, frequency of days with visibility more than 2½ miles, and upper winds of 0.5 km. level were added to those previously issued, namely: annual rainfall normal dates of onset and petering out of the SW monsoon, number of cyclonic depressions crossing coast in 50 years (1891–1940), mean monthly pressure, prevailing wind, rainfall, thunderstorms, dust storms, overcast, fog and winds at 1, 2, 4, 6, and 8 km. The charts have been extended to Persia, Siam and Indo-China whenever possible. (*See item* 4.8–200, Aug. 1953, *MAB.*) (*Same item* as 4.8–221, Aug. 1953, *MAB.*) *Subject Headings:* **1. Aeronautical climatology 2. Climate of India 3. Climatic atlases 4. India 5. Middle East 6. Southeast Asia. I. Normand, C. W. B.**—*M.R.*

5B–212 551.582.1(54)

India. Meteorological Dept., **India's climates: summary for airmen.** Summaries of climates of Afganistan, Persia, Ceylon, Burma, Siam and Indo-China are also appended. Poona, Pub. by the Govt., **1943.** 49+p. 2 diagrs. Price: Re 1-0-0. **DWB**—Charts show relief and political divisions of area from Arabia to Indo-China, including all of the states of India and the important synoptic weather stations in this area. A general summary of the climatic conditions of the six regions of India is followed by short summaries of the sky conditions, number of days with rain, thunderstorms, visibility, fog, haze, winds at the surface and aloft for each region as a whole and then for various

subdivisions of each region for each season, all arranged in systematic tabular form. (*Same item as* 4.8–220, Aug. 1953, *MAB.*) *Subject Headings:* **1. Aeronautical climatology 2. Climate of India 3. Middle East 4. India 5. Persia 6. Ceylon 7. Southeast Asia.**—*M.R.*

5B–213 551.582.2(51)

U. S. Weather Bureau, **Hainan Island—a climatic report.** *U. S. Weather Bureau, Special Report* No. 312, [1943?] 10 p. 2 tables. *U. S. Air Weather Service, Report* No. 525. **DWB**—Incomplete data for two stations in northern Hainan are compiled and summarily discussed particularly with regard to aviation. Notes on each of the various elements and meteorological factors are included, along with summary tables of upper winds and of the usual elements. *Subject Headings:* **1. Climate of Hainan Island 2. Aeronautical climatology 3. Upper air winds 4. Hainan Island. I. Miller, L. C.**

5B–214 551.582:629.13(265,269)

*U. S. Office of Naval Operations (Aerology Section), **Strategic aerological surveys.** Washington, D. C., Navy Hydrographic Office, **1943. Part 2. Pacific and Indian Ocean Areas.** H. O. No. 222–222A. **NN**—Contains schematic "climatic tables" (Nos. 101–156) for most regions of the Pacific and Indian Ocean areas, including those in South China, Southeast Asia, Philippines, Indonesia, Australian coasts, etc. The tables show monthly climatic means of all the usual elements at different stations within each regional division, and are sometimes accompanied by descriptive notes on seasonal peculiarities. *Subject Headings:* **1. Aeronautical climatology 2. West Pacific 3. Indian Ocean 4. Southeast Asia 5. Australia.**

5B–215 551.582

*U. S. Weather Bureau, **Weather summary, New Guinea area, for use with Naval Air Pilot.** *U. S. Hydrographic Office, H.O.*, No. 276, **1943.** 108 p. 29 charts, 5 tables. **DWB**—Comprehensive summary of weather in the New Guinea region is made, including consideration of general conditions and overall meteorological influences, pressure, typhoons, wind systems of open sea, winds by types and areas, squalls, thunderstorms, rainfall on land and sea (by regions), temperature, relative humidity, cloud, visibility at sea and on islands, upper air winds with surface and upper wind roses, resultant winds and velocity frequencies. Extensive meteorological tables for land stations and ocean areas, and a table of percentage frequency of winds from each direction and for different velocity groups are included. *Subject Headings:* **1. Climatic data 2. Upper air winds 3. New Guinea.**

1944

5B–216 551.582.3

*§Gherzi, Ernest, **Climatological atlas of East Asia.** Shanghai, Tou'se-we Catholic Mission Pr., **1944.** 175 p. maps, tables. **DLC**—Accompanying this large and comprehensive collection of maps are summarized data for temperature, pressure, prevailing wind direction, relative humidity, quantity of rainfall, number of rainy days, extratropical depressions and typhoons. The regions surveyed are central and eastern Siberia, Kamchatka, Sakalin Isl., Nippon, Korea, Manchuria, China, Formosa, the Philippine Islands, Indochina, Thailand and the western Pacific waters. Data series used in some cases extend over 30–40 years and in others consist only of recent observations. Included are: maps of annual mean temperatures, of maxima and minima, of annual temperature ranges, of mean monthly and annual relative humidity and rainfall, of mean pressure and wind direction; notes on typhoons with maps of selected tracks, selected tracks of continental depressions, typical seasonal weather maps for East Asia and a map of the main climatic regions of Asia. *Subject Headings:* **1. Climatic charts 2. Climatic data 3. Atlases 4. China 5. Formosa 6. Philippine Islands 7. Southeast Asia 8. East Asia.**

5B–217 551.582.2(54)

*India. Meteorological Dept., **Aviation climatological tables.** Bombay, Pub. by the Govt., **1944.** 70 p. mostly tables, map. Price: Re 8-8-0. **DWB**—Detailed tables are presented for surface and upper winds (16 points), temperature (daily maximum and minimum), rainfall, relative air density, cloud amount, frequency of low cloud amount and height, visibility, thunderstorms, fog, hail, dust and squalls for 70 selected stations in India and nearby Persia, Arabia, Ceylon, Burma, Siam and Indo-China. Data are arranged by stations, with monthly values for each element given under each station. (*Same item as* 4.8–222, Aug. 1953, *MAB.*) *Subject Headings:* **1. Climatic data 2. Aeronautical climatology 3. India 4. Middle East 5. Southeast Asia.**—*M.R.*

5B–218 551.506.1(922)

*Indonesia. Djawatan Meteorologi dan Geofisik, Djakarta, **Observations made at the Magnetic and Meteorological Observatory.** v. 1, **1866,** latest issue seen v. 67, **1944–.** From 1935– in several

ries, A, Meteorological Observations; B, Magnetical Observations; C, Climatological Tables; , Tables on Aeronautical Climatology. Not all volumes of all series have been issued to date. 1–67, **NN.** v. 1–66. **DWB**—Each volume of series contains hourly readings of meteorological ements at the observatory; atmospheric pressure, air and earth temperatures, relative humidity, et bulb temperature, wind direction and velocity, cloud, sun, rainfall and evaporation. Vol. 39 916) contains a summary of observations for 1866–1916; Vol. 43, summary for period 1866–1920; ol. 48, for 1866–1925; Vol. 58C, for 1866–1935; Vol. 63C, for 1866–1940. After 1935 records are cluded at various times for pyrheliometrical observations, atmospheric electricity, aerological servations, etc. *Subject Headings:* **1. Climatic data 2. Upper air data 3. Annual meteorological ports 4. Batavia, Java.**

5B–219 551.506.1(593)

*Thailand. Dept. of General Statistics, **Statistical yearbook of the Kingdom of Siam.** . . . Nos. -21, 1916–1944. tables. indexed. **DLC**—Includes in each issue climatic data for the previous ar or years for the usual elements at several stations. Issue for 1916 gives means for 1905–1914. *ubject Headings:* **1. Climatic data 2. Thailand.**

5B–220 551.582(596)

*U. S. Air Weather Service, **Climate of southern Indo-China.** *U. S. Air Weather Service, Report,* o. 695, 1944. 23 p. 11 tables. Typescript. **DWB**—General summary of climatic conditions of is region, noting best and poorest seasons for operations, over-all climatic controls such as mon- ons, local geographical controls, seasonal variations in wind direction and speed, cloudiness and ilings, fogs and visibility, typhoons and other usual elements. *Subject Headings:* **1. Climate of outhern Indochina 2. Southern Indochina.**

5B–221 551.582

U. S. Air Weather Service, **General Climatic Information Guides.** Washington, D. C., 1942– 944. Each a single folded sheet, with 11 figs. **NNA**— The series consists of general climatic guides ly but states that more specific information can be obtained from the Weather Information Branch. ach number includes a descriptive summary of the various climatic elements; temperature, pre- pitation, cloud and wind diagrams; topographic and soil trafficability maps; wind roses and a table the military implications of the climatic conditions. Singapore, Guide No. 32; Akyab, Burma, o. 40; Mandalay, Burma, No. 41; Rangoon, Burma, No. 42; Hong Kong, No. 51; Batavia, Java, o. 52; Bangkok, Thailand, No. 75; Saigon, French Indochina, No. 76; Manila, Philippines, No. 77; anoi, French Indochina, No. 89; Davao, Philippines, No. 99; Canton, China, No. 107; Luzon, ilippines, No. 122; Georgetown, Malay States, No. 128. *Subject Headings:* **1. Climatology Military climatology 3. Hong Kong 4. Java 5. Southeast Asia 6. Philippine Islands 7. Can- n, South China.**

5B–222 551.5:621.396.9

U. S. Weather Bureau, **Tropospheric weather factors likely to affect superrefraction of UHF-HF radio propagation as applied to the tropical western Pacific.** *U. S. Weather Bureau, Report* P-1, 1944. 100 p. 53 figs. **DWB**—Meteorological characteristics of the tropical western acific, including the East Indies, are presented in this preliminary report as a guide to the radar- eteorologist engaged in forecasting the atmospherically modified index of refraction, *M* curve. eteorological characteristics of the area are discussed first, followed by general discussion of various pes of normal inversions in the atmosphere and their associated modified refractive index. The eteorological factors which disrupt normal inversions are taken up. Finally, basic relations be- veen weather factors and modified index curves noted. Methods of computing the *M* curve from rological low-level sounding data are presented. In general, theoretical aspects of the whole oblem are not investigated. Numerous meteorological charts and diagrams are included. *Subject eadings:* **1. Radar meteorology 2. Radio wave propagation 3. Troposphere 4. Climatology Indonesia 6. Southwest Pacific.**

5B–223 551.582(914):355.4

*U. S. Office of Naval Operations (Aerology Section), **Climate and weather of the north Central hilippines Islands.** *U. S. Office of Naval Operations, NAVAER* 50-1T-21, 1944. 112 p. 13 figs., tables. **DWB**—Comprehensive survey made including a general description of climate, the rtheast monsoon, northeast trades and southwest monsoon, as well as more detailed treatment each climatic element including consideration of surface and upper winds with wind roses visi- lity, thunderstorms, etc., accompanied by extensive tabulated data from land stations and ocean eas. Operational significance of climate and weather discussed for ground, various type air, val and amphibian operations, and for chemical warfare. Illustrative charts and dia-

grams are included. *Subject Headings:* **1. Climatology 2. Aeronautical climatology 3. Military climatology 4. Upper air winds 5. Visibility 6. Philippine Islands.**

1945

5B–224 551.582:629.13(910,914)

Australia. Meteorological Service (R.A.A.F.), **Climatic and meteorological conditions in various localities in New Guinea and Bismarck Archipelago.** *Australia. Meteorological Service (R.A.A.F.), Research Report*, Ser. 5, **1942.** Also: **Climatic and meteorological conditions in various localities in New Guinea, Bismarck Archipelago, Netherlands East Indies, etc.** *Ibid.*, Ser. 7, [1942–1945?] **DWB**—Volumes of brief climatic summaries with tables of mean monthly values in some cases (mostly of temperature and rain and some upper winds) for many locations throughout the entire southwest Pacific area are organized by regions. Notes on cloud base, visibility, surface winds, sunshine duration, etc. included. *Subject Headings:* **1. Aeronautical climatology 2. Indonesia 3. Philippine Islands 4. Formosa 5. Australia 6. Southwest Pacific.**

5B–225 551.582:551.509.3

†*§Australia. Royal Australian Air Force. **Weather on the Australia station.** v. 1 (not printed). v. 2. **Local information.** v. 3. **Aids to forecasting.** *Australia. Royal Australian Air Force, Publication*, No. 252, **1942–1945.** maps, charts, tables. Vol. 2 also listed as: *Australia. Meteorological Service (R.A.A.F.), Research Reports*, Ser. 4. **DWB**—Vol. 2 consists of: Pt. 1, "Bismarck Archipelago" (58 p.); Pt. 2, "Northern Australian waters" (110 p.); Pt. 3, "The Coral Sea west from long. 155°E. including the coast of Papua and the Queensland coast from Cape York to Rockhampton" (147 p.); Pt. 12, "The eastern part of the Netherlands East Indies and the surrounding seas . . ." (122 p.). Each part contains a map of the area, various schematic diagrams, surface and upper wind roses, tables of climatic data for the usual elements and for upper winds at various stations in the region. Contents of text include chapters on general climatic and regional characteristics, cyclones, surface and upper winds, visibility, cloud, rain, temperature of sea and of air and their relative values; humidity, thunder, hail and snow, sea and swell, earth tremors, etc. A bibliography is included for each region (about 70 refs. in all). Vol. 3 consists of 3 parts of which the first is not in print. Pt. 2, "Analyzed charts" (containing charts Ser. 4, 16–18), contains series of synoptic charts with discussion in text as follows: Ser. 4, describing a "willy willy" on the northwest coast of Australia, May 23–27, 1942 (tropical cyclone); Ser. 16, a series of morning and afternoon maps for the area Dutch New Guinea to Sumatra, including Northern Australia—March 17–22, 1941; Ser. 17, same for equatorial areas between New Guinea and Sumatra, including Northwestern Australia, April 21–26; Ser. 18, same, May 19–24. Pt. 3, "Analyzed charts" (Ser. 1–2) as follows: Ser. 1, tropical cyclone over the Timor Sea and the Northern Territory (March 6–16, 1937); Ser. 2, illustrating the formation of tropical cyclone between Willis Island and the Solomon Islands and its passage westward to inland Queensland without recurve, Feb. 9–20, 1940. (*Same item as* 4D–141, April 1953, *MAB.*) *Subject Headings:* **1. Climatology 2. Weather forecasting 3. Synoptic charts 4. Synoptic studies 5. Tropical cyclones 6. Indonesia 7. Indonesian Seas 8. Australian Coasts 9. Australian Seas 10. Indian Ocean 11. Southwest Pacific.**

5B–226 551.515.8:551.552

Dobby, E. H. G., **Winds and fronts over southeast Asia.** *Geographical Review*, 35(2):204–218, April **1945. DWB**—Area includes archipelago of East Indies and adjoining peninsula of Asia. Observational data from network of stations of region are correlated, and nautical charts drawn showing mean transport of air in the Indian and West Pacific Oceans. By linking together the persistent mean winds given in each of the small graticules on charts, trajectories can be drawn showing direction and manner in which any one part of the SE Asia air mass tends to move during each month. The doldrum belt as a front is discussed. Analysis of the seasonal air streams is given. Relation noted between the Intertropical Front and tropical cyclones. *Subject Headings:* **1. Winds 2. Fronts 3. Tropical cyclones 4. Southeast Asia 5. Indonesia.**

5B–227 551.515.8:551.513

Fletcher, Robert Dawson, **Lecture notes on climate and weather of southeast Asia.** *U. S. Air Force. Tropical Weather School, APO* 832, Sept. **20, 1945.** 12 p. chart. **DWB**—Climate and weather characteristics of Southeast Asia are discussed as functions of the general circulation pattern, divided into zones of polar, tropical and equatorial westerlies and the trade winds. The effects of orography and of zonal current perturbations are considered. Intertropical convergence is interpreted according to the VON KARMAN vortex theory which is applied to the equatorial area and represented in two explanatory curves with special reference to the "reflection principle" utilized by British meteorologists in Ceylon. *Subject Headings:* **1. Air masses 2. Climate of Southeast Asia 3. Southeast Asia.**—*G.T.*

5B–228 551.582(51)

*Great Britain, Meteorological Office, **Meteorological report on south China south of a line Shanghai-Tsinling Shan.** *Great Britain. Meteorological Office, Aviation Meteorological Report*, No. 29, **1945.** 60 p. 7 figs., photos, tables. **DWB**—Important meteorological summary of region. The main physical features and limits of the area are given followed by a summary of general circulation in the four seasons. A detailed climatic account includes discussion of typical day-to-day weather, visibility, cloud, wind, temperature and humidity, precipitation, icing and upper air temperature, and typhoons. Particular climatic conditions of Yunnan Plateau are noted and flying conditions over the "Hump" and western Yunnan. Appendices include: climatic summaries for several stations of the region; wind values as derived from mean isobars at various heights; extreme and mean temperatures; mean daily values of temperature and effective temperature; average monthly rainfall and cloud photographs. *Subject Headings:* **1. Climate of South China 2. Aeronautical climatology 3. Visibility 4. Upper air winds 5. Yunnan Province, China 6. South China.**

5B–229 551.509.33:551.513.7

Maung Kha, Maung, **Forecasting the coastal rainfall of Burma.** *Royal Meteorological Society, Quarterly Journal*, 71:115–125, Jan./April **1945.** 3 figs., 4 tables. **DWB**—Forecasting formulas are obtained for June–Aug. rain of Arakan coast, Irrawaddy Delta and Tenasserim Coast, by first plotting world charts of anomalies of pressure and temperature for very deficient and excessive rain, selecting the common features and then calculating regression equations by WALKER's method. Multiple correlation .79 to .87. Failures due to local thunderstorm rainfall. (*Same item as* 2B–192, Feb. 1951, *MAB.*) *Subject Headings:* **1. Long range forecasting 2. Precipitation forecasting 3. Correlations 4. Burma.**—*C.E.P.B.*

5B–230 551.509.33

New Zealand. Meteorological Services (R.N.Z.A.F.) **Report on the extended range tropical forecasting project, Sept. 1944–Feb. 1945.** Wellington, **1945.** 33+p. 31 figs., 2 tables, 14 refs., 7 eqs. **DWB**—An attempt to apply long range forecasting methods developed by M.I.T. and U. S. Weather Bureau to tropical forecasting in the South Pacific region is described; attempt was unsuccessful owing to the obscurity of the relationships of tropical convection to the pressure systems discovered on the mean maps. Second part of report gives account of preliminary theoretical and analytical work carried out to discover relations between pressure systems and wind fields. Concluded that until further investigation, pressure systems cannot be related to short and long period changes in tropical weather. Maps include most of the Australia–New Zealand-Indonesia–South Pacific Region. (*Same item as* 4D–148, April 1953, *MAB.*) *Subject Headings:* **1. Tropical weather forecasting 2. Australasia 3. Indonesia 4. South Pacific.**

5B–231 551.515.7

§Orton, Robert B. (*U.S.A.A.F. Weather Central, Hsinching, China*), **The paths and characteristics of migratory anticyclones in Southeast Asia.** *U. S. Air Weather Service, Technical Report* 105-59B, Aug. **1945.** 15 p. 20 charts, refs. **DWB**—Optimum operational weather for Air Force flying and the existence of closed anticyclones over China are closely correlated. From current weather maps of Asia and historical weather charts of the Northern Hemisphere, monthly studies of the trends of migratory anticyclones over China and their relation to the Siberian "high" are made. *Subject Headings:* **1. Anticyclones 2. Synoptic studies 3. China 4. Southeast Asia.**—*M.P.K.*

5B–232 551.582:551.509.3(02)

†§U. S. Air Forces HDQ., **Tropical meteorology.** *U. S. Air Force. Manual* 105-0-2, **1945.** 268 p. numerous figs., 50 refs. Spanish translation available. **DWB**—A thorough resume is made of the theories, analytical aids and synoptic procedures, which have been demonstrated useful and effective in the various tropical regions of the world, including those of Southeast Asia and Indonesia. Synoptic charts and other illustrations appear schematically with explanation of observational data; no data tabulated, however. Contents include general atmospheric circulation in the tropics, tropical dynamic meterorology, analytical aids, waves in the easterlies, polar front in the tropics, zone of intertropical convergence and tropical cyclones. Good bibliography is appended. (*Same item as* 3H–173, Aug. 1952, *MAB.*) *Subject Headings:* **1. Tropical meteorology 2. Manuals 3. Southeast Asia 4. Indonesia 5. Tropical Africa 6. Tropics.**

5B–233 551.582(51)

†*§U. S. Air Weather Service, **Weather and climate of China. Parts A, B, C.** *U. S. Air Weather Service, Technical Report*, No. 105-34, **1945.** 2 v. Pt. A and B, 573 p., 128 figs., 108 tables, refs. p. 567–573. Pt. C, 69 p. **DWB**—An enormous collection of material on all of China including South China. Pt. A consists of a general discussion of climate of China together with data from sources published by the University of Chicago. Pt. B consists of frequency distribution of weather

elements and operational tables for selected stations using data supplied by U. S. Army Air Forces, Weather Division. Many schematic charts, wind roses etc. and much data are included, as well as a large bibliography, broad in scope, with references on climate and meteorology of China, of Far East Asia and adjoining seas, on typhoons and tropical storms and other tropical phenomena, etc. Pt. C consists of a discussion of the synoptic features of China weather with examples of synoptic weather maps illustrating particular features and proving basic information on synoptic processes in China. Topography, general circulation and air masses are considered as well as the synoptic features of winter, transitional and summer seasons. *Subject Headings:* **1. Climate of China 2. Climatic data 3. Tropical cyclones 4. Synoptic studies 5. China. I. Biel, Edwin R. II. Chicago. University.**

5B–234 91(03)(59)

U. S. Army Map Service, **Glossary of Indochinese terms.** 1st ed. June 20, **1945.** 34 p. **DWB**—Over a thousand terms—mostly topographical—which will be found on maps. Nineteen languages or dialects are represented and indicated, including Chinese, Malay, French and Burmese. *Subject Headings:* **1. Glossaries 2. Geographical terminology 3. Indochinese languages.**—*M.R.*

5B–235 551.515.13:551.515.73(4)(51/2)(265)

U. S. Weather Bureau, **Northern Hemisphere pressure center summaries [for years 1929–1938 for European theater, Pacific theater, Asiatic theater].** [1943]. unpaged. all charts. Supplement No. 1, **A comparison of monthly frequencies of low centers found on the Japanese Kobe Weather Maps with those found on the Northern Hemisphere Historical Maps for the years 1929–1936 for the area extending from 10°N to 40°N and 105°E to 140°W.** Washington, D. C., May **1945.** unpaged. entirely charts. **DWB**—Based on tracks of cyclones and anticyclones plotted from Northern Hemisphere Historical Weather Map series. Data given in form of monthly frequencies for each 5° square for period 1929–1938, both for total frequency and frequency of various intensities. Three areas covered: 1) Western Europe and NE Atlantic, 2) Southeast Asia and adjacent seas, and 3) Western Pacific (Hawaii to Sea of Japan). (*Same item as* 4I–166, Sept. 1953, *MAB.*) *Subject Headings:* **1. Cyclone frequencies 2. Anticyclone frequencies 3. Atmospheric circulation 4. Northern Hemisphere Historical Maps 5. Kobe Weather Maps 6. Western Europe 7. Southeast Asia 8. North Pacific.**—*M.R.*

5B–236 551.582:355.4

U. S. Weather Bureau, **Weather guides for long range planning.** Washington, D. C., **1942–1945.** 2 v. **DWB**—Vol. 1 contains guides for Rangoon, Burma; Port Blair, Andaman Islands; and Typhoons tracks supplement to weather guides—Southwestern North Pacific Ocean. Vol. 2 includes guides for Batavia, Java; Eastern Java and Bali; Formosa; Hokkaido; Medang and Sabang, Northern Sumatra; Penang Island, Straits Settlements; Singapore; Ryukyu and Kuril Islands. Guides are constructed as a basis of evaluating weather risk involved in long range planning, having dependability in direct relation to length and quality of records upon which each is based. Charts of cloud, wind, precipitation, temperature and humidity, and thunderstorm conditions are constituted; wind roses included. *Subject Headings:* **1. Climatology 2. Typhoons 3. Java 4. Bali 5. Sumatra 6. Straits Settlements 7. Burma 8. Andaman Islands 9. Ryukyu Islands 10. Kuril Islands, U.S.S.R. 11. Formosa 12. Hokkaido.**

1946

5B–237 551.582.2(596)

*French Indochina. Service de la Statistique Générale, **Annuaire Statistique de l'Indochine.** v. 10, **1941/1942** (pub. 1945). p. 1–18. chiefly tables. v. 11, **1943/1946** (pub. 1948). p. 1–22. chiefly tables. **DLC**—Chap. 1 of each volume gives tables of monthly and annual mean temperatures and total rainfall, number of days with rain and mean relative humidity for 6 to 21 meteorological stations of Indochina. (*Same item as* 2.6–122, June 1951, *MAB.*) *Subject Headings:* **1. Climatic data 2. French Indochina. I. French Indochina. Direction des Services Économiques.**—*M.R.*

5B–238 551.513

§John, I. G. and Hare, F. K., **Winter circulation over Burma, Thailand and Indo-China.** *Great Britain. Meteorological Office, Synoptic Divisions Technical Memorandum,* No. 120, [1946?]. 10 p. 2 tables, 25 figs., 8 refs. **DWB**—A series of synoptic charts, compiled from Jan. 1938 data for southern China, French Indochina, Burma and India, are analyzed to help clarify the general winter circulation over the parts of Asia lying between the areas covered by the Indian and the Chinese or Siberian monsoons. *Subject Headings:* **1. Winter circulation 2. Monsoons 3. Synoptic studies 4. South China 5. French Indochina 6. Burma 7. Thailand 8. India.**—*M.P.K.*

5B–239 551.553.11:551.509(910)

Kimble, George H. T. and others, **Tropical land and sea breezes (with special reference to the East Indies).** *American Meteorological Society, Bulletin*, 27:99–113, March **1946.** 11 figs. **DWB**—Article is designed to help meteorologists forecast local variations of the diurnal wind factor in the coastal waters of Southeast Asia and the Southwest Pacific islands, for military use in amphibious landings. Mechanisms of the land and sea breezes are discussed. A characteristic "land-and-sea breeze" (at Batavia) condition is analyzed. Geographical variations are pointed out: size of land mass; nature of terrain; proximity of other heat sources; and prevailing winds. Seasonal and day-to-day variations are also noted; and the "land-sea breeze" is considered in relation to local weather. *Subject Headings:* **1. Wind forecasting 2. Local winds 3. Military meteorology 4. Indonesia.**

5B–240 551.521.11(591)

*Lal, S. S., **Sunshine at Rangoon.** *India. Meteorological Dept., Scientific Notes*, 9(103):29–32, **1946.** 2 tables. **NNA**—Data of bright sunshine duration, recorded at Rangoon Port Observatory, Jan. 1931–Dec. 1940, are briefly discussed. Tables give monthly and annual totals of bright sunshine and monthly and annual means (in hours per month and per day) for the period. Annual and seasonal variations are noted. *Subject Headings:* **1. Sunshine duration 2. Rangoon, Burma.**

5B–241 551.506.1

*Portugal. Direcão Geral do Fomento Colonial. Serviço Meteorologico, **Anais Meteorologicos das Colonias,** v. 1, **1910/1914**–v. 33, **1946.** The above title is continued by *Portugal. Serviço Meteorológico Nacional, Anuario Climatológico de Portugal, Part II, Territorios Ultramarinas*, v. 1, 1947. **DLC**—Periodical contains detailed monthly climatic data for Portugal's various colonies throughout the world, including Timor (17 stations) and the colony of Macao, South China, as well as for Portugese colonies of Africa, etc. *Subject Headings:* **1. Climatic data 2. Annual meteorological reports 3. Timor 4. Macao.**

1947

5B–242 551.590.21:551.543.3(910)

Berlage, H. P., Jr., **Sunspot-numbers and air-pressure deviations in the Netherlands Indies.** *Indonesia.* (*K.*) *Magnetisch en Meteorologisch Observatorium te Batavia, Verhandelingen*, No. 31, **1947.** 15 p. fig., 3 tables, 9 refs. **NNA**—Author suggests that a three-year cycle in air pressure, prominent in the Netherlands Indies, is distorted by solar activity and discusses variations. Empirical rules to deduce the series of high- and low-pressure years in the Netherlands Indies from the mean yearly sunspot numbers are formulated, which leave only a few exceptions. *Subject Headings:* **1. Atmospheric pressure 2. Sunspots 3. Indonesia.**

5B–243 551.582(593)

*Bunnag, Charoon V., **Climates of Siam.** *Thailand. Meteorological Dept., Scientific Articles*, No. 4, Aug. **1947.** 16 p. 13 figs., 5 tables. **DWB**—A fairly detailed treatment of the general climatic features (temperature, rainfall, cloudiness, wind and fog) in each of 5 major regions of Siam. Histogram charts, wind roses and other visual presentations supplement the general tables of monthly mean values for each of 9 stations in the 5 regions, and a discussion of seasonal peculiarities is included. (*Same item as* 2.8–132, Aug. 1951, *MAB.*) *Subject Headings:* **1. Climate of Thailand 2. Thailand.**—*M.R.*

5B–244 551.509.33:551.513.7(922)

de Boer, H. J., **On forecasting the beginning and the end of the dry monsoon in Java and Madura.** *Indonesia.* (*K.*) *Magnetisch en Meteorologisch Observatorium te Batavia, Verhandelingen*, No. 32, **1947.** 20 p. 9 tables, 12 refs., eqs. **NNA**—Regression equations are computed for 12 districts for forecasting, on Sept. 1, the decade in which rains will start, using pressures at Kupang, Mauritius and Honolulu and temperature at Hong Kong; and for 13 districts for forecasting on March 1, decade of end of rains, using pressures at Mauritius, Manila and Santiago, Chile, temperature at Hong Kong and rain at Port Blair. Multiple correlations exceed .8. A possible explanation is given. *Subject Headings:* **1. Long range forecasting 2. Monsoon forecasting 3. Correlations 4. Java.**—*C.E.P.B.*

5B–245 551.542:551.509.33(922)

†de Boer, H. J., **Further researches into the physical reality of some long-periodic cycles in the barometric pressure of Batavia.** *Indonesia.* (*K.*) *Magnetisch en Meteorologisch Observatorium te Batavia, Verhandelingen*, No. 30, **1947.** 28 p. 23 figs., 25 refs., 11 eqs. **NNA**—Author makes a new periodic analysis of the pressure curve of Batavia with the aid of the sign coefficient method, equations for which are included. Results are given. Hypothesis is set up that the origin of the 5.97- and 2.34-year cycles is due to a variation of the amplitude of the 3.36-year cycle by the 7.32-

year cycle according to the mathematical process given. Thus, more evidence has been gathered in favor of the theory that the long-periodic cycles may be separated into real and unreal ones. (*See also* his earlier work on the same subject. *Ibid.*, No. 29, 1941, item 2B–165, Feb. 1951, *MAB.*) *Subject Headings:* **1. Long range forecasting 2. Cycles 3. Atmospheric pressure 4. Batavia, Java.**

5B–246 551.582

*France. Service Hydrographique de la Marine, **Golfe de Bengal, côte ouest de Sumatra, côte sud de Java.** [(Sailing instructions) for the Gulf of Bengal, west coast of Sumatra, south coast of Java.] *France. Service Hydrographique de la Marine, Instructions Nautiques*, No. 418, **1945.** Meteorology, p. 2–49. Also: **Mer de Chine. Vol. 1. Détroit de Malacca, Golfe de Siam et Mer de Chine méridionale jusqu'aux abords sud de Canton.** [China Sea. Vol. 1. Strait of Malacca, Gulf of Siam and South China Sea up to the south shores of Canton.] *Ibid.*, No. 424, **1947.** Unchecked. **GB-MO.** And: Great Britain. Hydrographic Office, **Pilots . . . for Malacca Strait, Eastern Archipelago.** 3 v. . . . **China Sea.** various dates, pagings. Unchecked. **DLC**—Climatic data for each region are included, along with sailing instructions. *Subject Headings:* **1. Marine climatic data 2. Marine pilot guides 3. Bay of Bengal 4. Indian Ocean. China Sea 5. Southeast Asia. I. Great Britain. Hydrographic Office.**

5B–247 551.524.2:612.5

Mom, C. P. and others, **The application of the effective temperature scheme to the comfort zone in the Netherlands Indies.** *Chronica Naturae*, 103(3/4):19–31, March/April **1947.** 6 figs. 10 tables, 11 refs., 12 eqs. **NNA**—Theoretical questions of what the optimum working conditions are and what optimum effective temperature is are investigated. 21 persons served as subjects for the investigation into an effective temperature scheme for the Indies. Observations are made in still air, with subjects in tropical clothing. Use is made of the Mollier chart, and lines of equal comfort are superimposed on it. A Mollier chart is shown with effective temperature lines and comfort zone for the Indies, and a comparison is made between the effective temperature scheme for the U. S. and that in the Indies. *Subject Headings:* **1. Temperature 2. Comfort zones 3. Physiological climatology 4. Human activity 5. Indonesia.**

1948

5B–248 551.521.1

*Boerema, J., **Solar radiation measurements in the Netherlands Indies. Part I. Pyrheliometric observations by eye reading from 1915–1925.** *Indonesia.* (*K.*) *Magnetisch en Meteorologisch Observatorium te Batavia, Verhandelingen*, No. 34:3–14, **1948.** fig., 6 tables, 5 refs., eq. Berlage, H. P., Jr., **Part II. Recording radiation of sun and sky from 1926–1941.** *Ibid.*, p. 15–21. fig., 2 refs. **Part III. [Tables].** *Ibid.*, p. 22–47. 26 tables. **MH-BH**—Fluctuations of air pressure in Java during the abnormal period 1912–14, possibly resulting from the Katmai eruption and attending decrease in solar radiation, led to the establishment of observations of intensity of solar radiation with a Smithsonian silver disk pyrheliometer in 1915 at Batavia (and occasionally at other places). Later observations were made with a portable Michelson type actinometer. Results for subsequent years are summarized in detail in these two articles. Comparisons are given with stations in Holland and U.S.A. (*Same item as* 2.5–91, May 1951, *MAB.*) *Subject Headings:* **1. Solar radiation measurement 2. Solar radiation 3. Indonesia. I. Berlage, H. P., Jr.**—*M.R.*

5B–249 551.582:629.13

Hong Kong. Royal Observatory, **Meteorological information for aviation purposes.** *Hong Kong. Royal Observatory, Technical Memorandum*, No. 1, **1948.** 17 p. maps fold., figs., tables. **NNA**—Mean values of upper winds and temperatures and wind roses for different levels up to 20,000 ft are compiled from pilot balloon observations at the Royal Observatory, 1921–1932. A section discusses typhoons, based on 50-year statistical survey of observations made at the Observatory. Seasonal and general climatic summaries are also included. *Subject Headings:* **1. Aeronautical climatology 2. Upper air winds 3. Upper air temperatures 4. Typhoons 5. Hong Kong.**

5B–250 551.501.9(09)(914)

Repetti, William C., **The Manila Observatory.** Wash., D. C., **1948.** 43 p. **NN**—Detailed history of the 77 years of unbroken record of the observatory in chronological order. No data. *Subject Headings:* **1. Manila Observatory 2. History of observatories 3. Manila, Philippine Islands.**

5B–251 551.501:06(914)

U. S. Weather Bureau, **Report of U. S. Weather Bureau mission in the Philippines.** April **1948.** Mimeo. **DWB**—Report on Philippine Meteorological Service, conditions, activities

stations, etc. No data. *Subject Headings:* **1. Meteorological services 2. Philippines Meteorological Service 3. Philippine Islands.**

1949

5B–252 551.577.2(910)

*Berlage, H. P., Jr., **Regenval in Indonesië.** [Rainfall in Indonesia.] *Indonesia.* (*K.*) *Magnetisch en Meteorologisch Observatorium te Batavia, Verhandelingen*, No. 37, **1949.** 212 p. 3 fold. maps, numerous tables. In Dutch and English. **NNA**—Observations of precipitation at all those stations of Indonesia which have operated at least five consecutive years, between 1879 and 1941, are tabulated; stations number 4339; locations shown on map. (*Same item as* 2.4–128 and 2.7–136, April, July 1951, *MAB.*) *Subject Headings:* **1. Precipitation data 2. Indonesia.**

5B–253 551.509.33:551.577.2

*de Boer, H. J. and Euwe, W., **Forecasting rainfall in the period July–August–September for parts of Celebes and South Borneo.** *Indonesia.* (*K.*) *Magnetisch en Meteorologisch Observatorium te Batavia, Verhandelingen*, No. 36, **1949.** 14 p. 6 tables, 5 refs., 25 eqs. **MH-BH**—Regression equations are developed giving rainfall of 3-month period using mean pressure for various preceding months at Kupang, Manila, Mauritius, Honolulu, Apia and Santiago and mean temperature at Hong Kong by a method of successive approximation. Multiple correlation: Celebes .82 to .83, Borneo.87. Effects considered to be transported by ocean currents. (*Same item as* 2B–214, and 2.7–43, Feb., July 1951, *MAB.*) *Subject Headings:* **1. Precipitation forecasting 2. Long range forecasting 3. Correlations 4. Indonesia.**—*C.E.P.B.*

5B–254 551.524.3

*de Boer, H. J. and Euwe, W., **On long-periodical temperature variations.** *Indonesia.* (*K.*) *Magnetisch en Meteorologisch Observatorium te Batavia, Verhandelingen*, No. 35, **1949.** 16 p. 15 figs., 3 tables, 5 refs. **MH-BH**—An analysis of air temperature in Batavia and several other localities in Java, by the use of running means of successive 10-year periods, indicates a definite rise in temperature between 1921 and 1936. Similar increases in temperature have been noted all over the world, but at the same time some other localities show a simultaneous fall in temperature. The temperature curves of 150 stations, based on two year intervals from 1890 to 1930, have been mapped, and it is considered that there are large regions on the earth with long periodical temperature variations originating in the subtropical high pressure centers. (*Same item as* 2.7–103, July 1951, *MAB.*) *Subject Headings:* **1. Temperature variations 2. Java.**—*I.L.D.*

5B–255 551.509.33:551.577(911)

*Euwe, W., **Forecasting rainfall in the periods December–January–February and April–May–June for parts of Celebes and South Borneo.** *Indonesia.* (*K.*) *Magnetisch en Meteorologisch Observatorium te Batavia, Verhandelingen*, No. 38, **[1949].** 24 p. 10 tables, 5 refs., 39 eqs. **DWB**—Using rainfall data for 60 stations in Celebes and Borneo (1911–1940), pressure data for various island stations in the tropics (Kupung, Hokitika, Apia, Honolulu, Manila and Mauritius, and Santiago, Chile) and temperature data for Hong Kong, multiple regression equations are set up and tested for the purpose of forecasting Dec.–Feb. and April–June rainfall in several sections of Celebes–Borneo. Only data for 1941 was available for testing validity of theory, and disappointing results were obtained, owing to the year 1941 being one similar to 1920 and 1932 when variations were marked. (*Same item as* 2.4–34, April 1951, *MAB.*) *Subject Headings:* **1. Long range forecasting 2. Statistical forecasting 3. Precipitation forecasting 4. Celebes 5. Borneo.**—*M.R.*

5B–256 551.509.33:551.577(922)

*Euwe, W., **Forecasting rainfall in the period December–January–February for Java and Madura.** *Indonesia.* (*K.*) *Magnetisch en Meteorologisch Observatorium te Batavia, Verhandelingen*, No. 39, **[1949].** 16 p. 8 tables, 7 refs., 23 eqs. **DWB**—Rainfall data for 1911–1940 for 42 stations on the north coast of Java and on Madoera were used in connection with mean monthly air pressure at Kupang, Hokitika, Apia, Santiago, Honolulu, Manila, Mauritius, and mean monthly air temperature at Hong Kong to set up a regression equation for forecasting rainfall during the west monsoon period. Testing multiple regression equations against 1941 it appears that differences between computed and observed values are too large. (*Same item as* 2.4–35, April 1951, *MAB.*) *Subject Headings:* **1. Long range forecasting 2. Statistical forecasting 3. Precipitation forecasting 4. Java 5. Madoera.**—*M.R.*

5B–257 551.510.535

Hon, Yung-sen, **Stratification of the F2-layer of the ionosphere over Singapore.** *Journal of Geophysical Research*, 54(4):363–366, Dec. **1949.** 3 figs. Abstract p. 363. **MH-BH**—Studies of critical frequencies of E and F layers over Singapore show that by day the F2 layer splits into three,

with virtual heights roughly 300, 400 and 500 km (virtual height is based on time of propagation of beam and differs from geometric height). (*Same item as* 2.7–64, July 1951, *MAB.*) *Subject Headings:* **1. F2 layer 2. Singapore.**—*C.E.P.B.*

5B–258 551.506.7(595)

*Malaya. Meteorological Service, **Summary of observations of winds (surface and upper), 1932–1941.** Singapore, Gov't Printing Office, **1949.** extensive tables; title varies. **DWB**—Pilot ballon observations were begun in Malaya in Sept. 1932 (Singapore and Kuala Lumpur) and expanded in subsequent years to include Penang, Labuan and Kuala Pahang as well. Tables give values for surface and upper winds, with explanatory notes on methods, procedures, etc. Before 1934 results were published in the form of wind roses; from 1934 on they were published for surface, 1500, 3000, 6000, and 10,000 ft and given in the form of frequency of winds from eight directions in five velocity groups for two observations a day. (*Same item as* 3.1–37, Jan. 1952, *MAB.*) *Subject Headings:* **1. Wind data 2. Upper air wind data 3. Malaya.**

5B–259 551.506.1(914)

*Philippines. Weather Bureau, **Quarterly Climatological Review.** 1(1), Jan./March **1949.** 87 p. tables. Mimeo. **DLC, DWB**—Temperature and rainfall data for the first quarter of 1949 are given. The temperature data are: monthly means, monthly extremes and daily maximum and minimum values. The rainfall data consist of monthly totals, maximum rainfall in 24 hours and days with rainfall. Also normal values of temperature and rainfall for each station are given. A general summary of weather conditions in the Philippines for the quarter and a list of weather stations are included. (*Same item as* 3.4–48, April 1952, *MAB.*) *Subject Headings:* **1. Climatic data 2. Monthly data bulletins 3. Philippine Islands.**—*I.L.D.*

5B–260 551.582.2:629.13(910)

*Schmidt, F. H., **Meteorological data of Indonesian aerodromes, 1949.** Djakarta, Indonesia, Meteorological and Geophysical Service, [n.d.] 116 p. entirely tables. **MH-BH**—Data for 1949 from seven of the more important airport stations of Indonesia are tabulated, that is from Medan and Palembang on Sumatra, Balikpapan on South Borneo, Djakarta and Surabaja on Java, Makassar on Celebes, and Kupang on Timor. Data are given for frequency of concurrent wind speeds and direction, horizontal visibility, low cloud elevation, occurrence of specified weather phenomena, and, finally, frequency of the simultaneous occurrence of specified visibility (below 2000 m) and/or specified height of the cloud base (below 300 m), if such clouds cover more than $\frac{4}{8}$ths of the sky, and in concurrence with wind direction. *Subject Headings:* **1. Airways climatic data 2. Indonesia.**

5B–261 551.511:551.515

Schmidt, F. H., **On the theory of small disturbances in equatorial regions.** *Journal of Meteorology,* 6(6):427–428, Dec. **1949. MH-BH**—Solution of perturbation equations for application to waves or small disturbances in the tropics such as those which occasionally affect Java during both the wet and dry seasons. These disturbances originate in the southern Indian Ocean and first appear in the vicinity of the Cocos Islands and tend to disappear as they approach the equator. Difficulties in the solution arise from great variation in the coefficients as the system goes from high to low latitudes. (*Same item as* 4.3–110, March 1953, *MAB.*) *Subject Headings:* **1. Perturbation equations 2. Easterly troughs 3. Tropical meteorology 4. Indonesia.**—*M.R.*

5B–262 551.553.21:551.509.31:(54)(591)

Tun Yin, Maung, **A synoptic-aerologic study of the onset of the summer monsoon over India and Burma.** *Journal of Meteorology,* 6(6):393–400, Dec. **1949.** 9 figs., 18 refs. **DWB**—Analysis of 3 km and 8 km pressure and air-flow charts over southeast Asia show that the onset of the monsoon occurs in connection with a westward displacement of the high-level trough, a disintegration of the branch of the jet stream which prevails south of the Himalayas in spring and a southward movement of the trough and jet stream over Siberia. The monsoon strikes Burma somewhat earlier than India. (*Same item as* 3–87, March 1950, *MAB.*) *Subject Headings:* **1. Monsoons 2. Synoptic aerological studies 3. Jet stream 4. India 5. Burma.**—*M.R.*

5B–263 551.515.8(910)

*§Watts, I. E. M., **The equatorial convergence lines of the Malayan–East Indies area.** *Malaya. Meteorological Service, Memoirs,* No. 3, **1949.** 29 p. 7 figs., 10 tables, 8 refs. **DWB**—Major convergence lines of Malayan–East Indies area, disregarding the surges of the southwesterly and northeasterly monsoons, are studied. Cloud structure is considered, and in particular, the possibility of an "equatorial warm front" is investigated by seeking evidence of upslide in the alto-stratus sheet. Detailed estimation of the slope of the surface of convergence made, and variations noted and discussed. *Subject Headings:* **1. Convergence 2. Fronts 3. Indonesia 4. Malaya.**

1950

5B–264 551.581

Braak, Cornelius, **Kenmerkende Eigenschappen von het Tropische Klimaat.** [Characteristic properties of tropical climate.] (*K.*) *Nederlandsh Aardrijkskundig Genootschap, Tijdschrift,* 67(5): 617–629, [1950]. diagrs., tables. In Dutch; English summary p. 628. **DWB**—This description of a tropical climate covers the climatic characteristics within 15° north and south of the equator and is based primarily upon observations made in the Indonesian Archipelago. A detailed discussion of the characteristics of atmospheric pressure, wind force, temperature, humidity, thunderstorms and fog is presented. (*Same item as* 3.4–223, April 1952, *MAB.*) *Subject Headings:* **1. Tropical climatology 2. Indonesia.**—*I.L.D.*

5B–265 551.5:06(92)

Braak, Cornelius, Boerema, J. and Berlage, H. P., Jr., **Meteorologie en klimatologie. I. Tot 1296** (*sic*). **II. Van 1926 tot aan de oorlog in de Pacific. III. Na de oorlog in de Pacific, de Meteorologische en Geophysische Dienst.** [Meteorology and climatology. I. Up to 1926 (by Dr. Braak). II. From 1926 to the war in the Pacific (by Dr. Boerema). III. After the Pacific war; the Meteorological and Geophysical Service (by Berlage).] *Chronica Naturae,* 106(5):207–215, May **1950. DLC**—A review of the history of meteorological observations, publications and weather service as it was developed in the Netherlands Indies, beginning with the earliest mention of monsoons in East India (VALENTIJN, 1724) down to the second World War and the present organization as it has been constituted since the war; especially the measures taken to bring the service in line with IMO resolutions made at Toronto and Washington (1947) and regional conferences since. (*Same item as* 2.9–2, Sept. 1951, *MAB.*) *Subject Headings:* **1. Meteorological services 2. History of meteorological services 3. Indonesia.**—*M.R.*

5B–266 551.582 551.552(596)

*Bruzon, E.; Carton, P. and Romer, A., **Le climat de l'Indochine. Aperçu général et régime des vents.** [Climate of Indochina. General survey and wind regime.] Saigon, **1950.** 159 p. charts, numerous tables. **DWB**—First part of work includes discussions of geographic conditions, the monsoon regime, cloud, horizontal visibility, thunderstorms, and climatic regions, as well as of all the usual elements with climatic tables for various stations. The second part includes discussion of the wind regime during the year, local influences, and principal aerial currents over Indochina, with extensive tabulated data on surface winds observed twice daily and upper air wind frequencies over different stations at progressive heights. (*Same item as* 4E–187, May 1953, *MAB.*) *Subject Headings:* **1. Climate of French Indochina 2. Wind data 3. French Indochina. I. French Indochina. Service Météorologique.**

5B–267 551.577.51(922)

*de Boer, H. J., **On the relation between rainfall and altitude in Java, Indonesia.** *Chronica Naturae,* 106(8/9):424–427, Aug./Sept. **1950.** 3 tables, 3 refs. **NNA**—Mean yearly rainfall figures are plotted against corresponding altitudes for three parts of Java; conclusions are drawn regarding these figures as a function of altitude from sea level to 3500 m. (*Same item as* 2.9–139, Sept. 1951, *MAB.*) *Subject Headings:* **1. Precipitation variations 2. Topographic effects 3. Java.**

5B–268 551.553.21

Flohn, H., **Neue Erkenntnisse über die Monsunzirkulation.** [New knowledge of the monsoon circulation.] *Meteorologische Rundschau,* 3(7–8):176, July–Aug. **1950. DWB**—Briefly describes: 1) tropical monsoon with westerly; 2) with easterly component; 3) southeast monsoon of East Asia and 4) extratropical seasonal winds. Discusses permanence of high level troughs on east coast of North America and Eurasia. (*Same item as* 11–103, Nov. 1950, *MAB.*) *Subject Headings:* **1. Monsoon circulation 2. East Asia 3. North America 4. Eurasia.**—*C.E.P.B.*

5B–269 551.509.3

Grimes, A., **Forecasting in the equatorial zone.** [1950?] 13 p. diagrs., 2 eqs. Mimeographed. **DWB**—Brief descriptive notes on the air masses, winds, fronts and tropical storms of the Malayan area written from memory by a forecaster of eight years experience. All charts and data on which the notes are based were lost during the war. *Subject Headings:* **1. Weather forecasting 2. Malaya.**—*M.P.K.*

5B–270 551.506.7(595)

*John, I. G., **The properties of the upper air over Singapore.** *Malaya. Meteorological Service, Mémoires,* No. 4, **1950.** 35 p. 22 plates, 33 tables, 12 refs. **DWB**—Contents include introduction as to the meteorological flights, instruments, methods, etc.; discussion of annual variations of atmospheric properties; mean monthly tephigrams; effects of diurnal heating; air masses and air mass

analysis; and subsidence in the southwest monsoon. Numerous graphs and tables of computed data are included. (*Same item as* 3.1–36, Jan. 1952, *MAB.*) *Subject Headings:* **1. Upper air data 2. Upper air charts 3. Upper air climatology 4. Air masses 5. Singapore.**

5B–271 551.553.6:656.61

*Keyser, H., **Stoomwegen van Indonesië naar China en Japan.** [Steamship routes from Indonesia to China and Japan.] *Netherlands.* (*K.*) *Meteorologisch Instituut, No. 111, Optellen op Oceanografisch en Maritiem Meteorologisch Gebied,* No. 6, **1950.** 2nd ed. 36 p. tables, 3 maps, 3 foot refs. Price f 1.25. **DWB**—Tables and charts show the many possible steamship routes between various points in East Asia and bordering islands (Japan, Philippines, Borneo and Hong Kong). Tables give geographical distance between points and equivalent distances at 4 seasons (Jan., April, July and Oct.) when corrected for currents and for wind, respectively, for each route. Supplementary tables give monthly frequencies of winds of Beaufort 8, 9, 10, 11 and 12 or height for 10 routes. *Subject Headings:* **1. Wind frequencies 2. Storm frequency data 3. Steamship routes 4. Malay Archipelago.**—*M.R.*

5B–272 551.553.21

†Lautensach, Hermann, **Der hochsommerliche Monsun in Süd- und Ostasien und auf den angrenzenden Meeren.** [The mid-summer monsoon in south and east Asia and neighboring seas.] *Petermanns Geographische Mitteilungen,* 94(1):18–24, **1950.** fig. (fold. in back), 49 refs. **DLC**—A long discussion of the summer monsoon in various parts of east and southeast Asia (from Kamchatka to Arabia), on the basis of air masses and regions of convergence and divergence, accompanied by a generalized stream line chart of the whole area (showing frontal zones and the influence of the Himalayas). (*Same item as* 10–108, Oct. 1950, *MAB.*) *Subject Headings:* **1. Monsoon circulation 2. Orographic effects 3. Southeast Asia.**—*M.R.*

5B–273 551.5:06(09)(54)

Philippines. Weather Bureau, **The Elements.** First issue v. 1(1), Jan. **1950–.** Mimeo. **DWB**—The purpose of this mimeographed pamphlet (which comes out monthly) is to allow members of the Philippine Weather Bureau to exchange views for improvement of the service. Contains short informative articles, letters, news, questions and answers; and description of service activities. (*Same item as* 3.7–20, July 1952, *MAB.*) *Subject Headings:* **1. Meteorological service bulletins 2. Meteorological services 3. Philippine Islands.**—*M.R.*

5B–274 551.521.1(922)

Schmidt, F. H., **On the distribution of duration of sunshine in Java.** *Indonesia.* (*K.*) *Magnetisch en Meteorologisch Observatorium te Batavia, Verhandelingen,* No. 40, **1950.** 18 p. 6 figs., 11 charts in pocket, 4 refs. **NNA**—Conclusions are drawn as to the laws governing the duration of sunshine in a tropical mountainous island such as Java. Considerations investigated are: the relation between cloudiness and the duration of sunshine; the annual variation of the duration of sunshine; the daily variation of the duration of sunshine; the relation between sunshine and elevation above sea level. Chart shows the distribution of sunshine stations over Java and Madoera, and list gives their names, coordinates, and elevation. Figures and charts show distribution and variations of sunshine in a particular location, as well as for the whole region of Java and Madura, in different months, monsoons, etc. (*Same item as* 2.6–64, June 1951, *MAB.*) *Subject Headings:* **1. Sunshine duration 2. Java 3. Madoera.**

5B–275 551.515.8:551.509.318

§Schregardus, M. W. F. and Bierman, M., **Een overtrekkende Slechtweerzone op Java.** [A passing bad-weather zone of Java.] *Chronica Naturae,* 106(2), Feb. **1950.** 12 figs., 3 refs. **DLC**—Synoptic, climatological and aerological analysis of a cold-front situation (May 29–June 2, 1949) which caused bad weather along the coasts of Java. The front moved from the Indian Ocean toward Java from the southwest and had many characteristics of an extratropical cold front. Four detailed isohyetal charts show rainfall over Java on four days (May 31–June 2). (*Same item as* 8–50, Aug. 1950, *MAB.*) *Subject Headings:* **1. Cold fronts 2. Synoptic aerological studies 3. Java.**—*M.R.*

5B–276 551.577.2 551.515.2(51)

Starbuck, L., **Statistical survey of Hong Kong rainfall.** Hong Kong, Government Printers, **1950.** 14 p. 18 figs. **NNA**—A concise, principally diagrammatic representation of the Hong Kong rainfall regime is presented, using statistical determinations for the 55-year period, 1884–1948, the records of which were made at the Royal Observatory under similar conditions. Sections take up monthly and annual rainfall, distribution, frequencies, rain days, duration intensity, diurnal varia-

tions, droughts, frequencies and durations, structure of Hong Kong rainfall, and consideration of typhoons and rainfall. *Subject Headings:* **1. Precipitation 2. Typhoons 3. Hong Kong. I. Hong Kong, Royal Observatory.**

5B–277 551.578.32:551.515.2

Starbuck, L., **Typhoons and Hong Kong rainfall.** *Weather*, 5(4):158–159, April **1950.** 2 figs. **DWB**—Five-day means of rainfall, 1884–1948, show a double maximum separated by a minimum July 5–14. The first maximum is ordinary annual variation, second maximum is due to typhoon rainfall. Second half of rainfall curve agrees with curve of typhoon frequency. (*Same item as* 5–80, May 1950, *MAB.*) *Subject Headings:* **1. Rainfall variations 2. Typhoons 3. Hong Kong.**

1951

5B–278 551.571.2(51)

*Gherzi, E., **A humidade de Macau.** [Humidity at Macao.] *Macau. Observatório Meteorológico, Notas Científicas*, No. 1:1–15, **1951.** tables. English trans. p. 11–15. **NNA**—Comparison of humidities of Macao and Hong Kong made, and causes of the higher humidity at Macao explained. Tables give mean monthly relative humidity, temperature, rainfall and rainy day values for varying long periods for Macao, Hong Kong, Canton and Swatow. *Subject Headings:* **1. Humidity 2. Climatic data 3. Macao 4. Hong Kong 5. Canton, South China 6. Swatow, South China.**

5B–279 551.582.2(51)

†*§Gherzi, Ernesto, **The meteorology of China.** Macao, Serviço Meteorológico, **1951.** 2 v. figs., maps, graphs, tables, 198 refs. p. 377–388. **DWB**—One of the most comprehensive works on the climatology of an area yet published. The manuscript was ready for the printer in 1939 but publication was delayed due to the war. After the war it was supplemented but during the occupation of Zi-ka-wei in 1949 these revisions were lost and so the present work is essentially that which was ready for printing in 1939. Vol. I contains a detailed discussion (with numerous charts, tables, graphs and diagrams) of air masses, pressure, temperature, cold waves, hot waves, rain, humidity, wind at surface and aloft, extratropical cyclones, tropical cyclones and a discussion of the "climatic regions" of China (52 areas). Numerous tables of local weather records and an index add to the value of this work. Vol. II is a large compilation of detailed tables and graphs, synoptic charts, storm tracks, microseism records, climagrams, barograms for typhoons, upper level charts (mean), soundings, contingency tables for temperature, humidity, evaporation, rainfall, fog, surface winds, upper air winds, frost, gusts, isentropes, etc. The variety of material and types of presentation is astonishing. The number of stations for which data are compiled varies from 1 to 215. Of course the most valuable portion is that which deals with typhoons, since GHERZI has made a lifetime study of tropical storms in the Far East. Many of the illustrative synoptic charts for typhoon situations are in color. A valuable station location chart is included. (*Same item as* 3.10–6, Oct. 1952, *MAB.*) *Subject Headings:* **1. Climate of China 2. Typhoons 3. Synoptic studies 4. Climatic data 5. China 6. Far East.**—*M.R.*

5B–280 551.575.1

*Hung, K. R., **Fogs at Waglan Island and their relationship to fogs in Hong Kong harbour.** *Hong Kong. Royal Observatory, Technical Notes*, No. 3, Dec. **1951.** 8+p. 10 figs., 11 tables, 5 refs. Mimeographed. **DWB**—Conditions "most favorable for sea fog formation at Waglan" determined and "relationship between fogs at Waglan Island and fogs in the harbor area of Hong Kong" discussed for forecast purposes. Considerable data included. *Subject Headings:* **1. Sea fog 2. Waglan Island 3. Hong Kong 4. China Sea.**—*M.P.K.*

5B–281 551.577.36(591)

*Lal, S. S., **Study of hourly rainfall at Mingaladon Airport, Burma.** *India. Meteorological Dept., Memoirs*, 28(6):229–253, **1951.** 6 figs., 14 tables. Price: Re 3–10, or 5 sh 9 d. **DWB**—The rainfall records of Mingaladon observatory for the nine years (October 1932 to September 1941) have been analyzed. Tables showing the hourly variation of rainfall amounts, of occasions of rainfall of various magnitudes and average amount of precipitation for each hour in different months and seasons of the year have been given. The occurrence and distribution of rainfall in relation to morning and afternoon upper wind direction on rainy days at 0.5 km. a.g.l., and 1, 2 and 3 kms. a.s.l. over Mingaladon have also been studied. The characteristic feature of the diurnal variation of rainfall is a marked increase in the afternoon hours of both the rainfall amounts and occasions of rainfall. In practically all the seasons, the average hourly intensity yields low values in the morning hours. The upper wind directions associated with maximum rainfall are between east to south in the cool and post-monsoon seasons and south to west in the hot and SW monsoon seasons. In the cool season a backing of wind from west towards east is most favorable for rain, in hot season and

monsoon season the prevailing winds are most favorable, while in the post-monsoon season, a veering of winds from East towards South is most favorable for rain. *Subject Headings:* **1. Rainfall frequencies 2. Diurnal rainfall variations 3. Rangoon, Burma.**—*Author's abstract.*

5B–282 551.509.317:551.509.54

Libuit, Modesto O., Jr., **On the objective method of forecasting rain for Manila.** *Philippines. Weather Bureau, The Elements,* 2(6):5–6, June **1951. DWB**—An objective method for May–Oct. is developed from 1948–1950 data. Method is based on 2000 ft MSL wind, average relative humidity of the 800–500 mb layer, and recorded 24-hour rainfall. Results are still in the process of testing in the Philippines. (*Same item as* 3E–211, May 1952, *MAB.*) *Subject Headings:* **1. Objective forecasting 2. Precipitation forecasting 3. Manila, Philippine Islands.**—*M.P.K.*

5B–283 551.506.1:629.13(058)(595)

*Malaya. Meteorological Service, **Frequency tables (low cloud, visibility, sunshine) and anemogram analysis, 1938 to 1941, 1946.** And: . . . **1950.** Singapore, **1939–1951.** tables. **DWB**—Observations of cloud base (ceiling) height, and visibility 3 times a day for 17 stations are tabulated for each month according to frequency within various standard limits. Duration of sunshine, wind speed and maximum wind are also tabulated for each month for the same stations. No annual summary appears in 1950 publication. (*Same item as* 3.6–35, and 3I–253, Jan. and Sept. 1952, *MAB.*) *Subject Headings:* **1. Airways climatic data 2. Malaya. I. Moorhead, H. B. F.** (*ed.*).—*M.R.*

5B–284 551.510.535

Osborne, B. W., **Ionospheric behaviour in the F2 region at Singapore.** *Journal of Atmospheric and Terrestrial Physics,* 2(1):66–78, **1951.** 8 figs., 11 refs. **MH-BH**—Describes measurements of critical frequency and virtual height Nov. 1948–Aug. 1950 in 1°19N, 103°49E. In daylight main types were: Nov.–Feb., thick F2 layer during two hours after dawn, becoming unstable or turbulent after 9 hr LMT; June–Aug. stable thick layer in afternoon with low critical frequency; March–May and Sept.–Oct. single layer of higher critical frequency throughout day. Annual and diurnal variation of thick layer analyzed. After sunset at ground there was a rapid rise of minimum virtual height to a maximum at sunset at 390 km. Greatest scatter around 20 hr. The interpretation of the results is discussed. (*Same item as* 3.5–127, May 1952, *MAB.*) *Subject Headings:* **1. F2 layer 2. Singapore.**—*C.E.P.B.*

5B–285 551.5:06(92)

§Schmidt, F. H. and Schregardus, M. W. F., **Iets over de weerdienst in Indonesië.** [Something about the weather service in Indonesia.] *Hemel en Dampkring,* 49(2,3):23–31; 54–59, **1951.** 13 figs. **DLC**—The account begins with a brief summary of the synoptic organization and map of stations. The type of weather map met with is illustrated by 3 analyzed charts with fronts and upper air temperature and dew point. Pt. 2 discusses causes of rainfall distribution (blocking by high ground and forced ascent; convergence and divergence, local and frontal). These are illustrated by two charts of monthly rainfall and one of fronts. Finally, Indonesian meteorology and aviation are briefly discussed. (*Same item as* 2.8–5, Aug. 1951, *MAB.*) *Subject Headings:* **1. Meteorological services 2. Indonesia.**—*C.E.P.B.*

5B–286 551.583.15(92):551.513.7

Schmidt-Ten Hoopen, Mrs. K. J. and Schmidt, F. H., **On climatic variations in Indonesia.** *Indonesia. Djawatan Meteorologi dan Geofisik, Verhandelingen,* No. 41, **1951.** 43 p. 34 figs., 2 tables, 11 refs. **DWB**—The considerable climatic variations at Djakarta (Batavia) since 1871 are shown by curves for each month, smoothed over 11 years, of mean, maximum and minimum temperature, wet bulb, pressure, sunshine and rainfall, also annual raindays. The study of rainfall is extended to all East Indies, northern and southern groups of stations being distinguished which vary oppositely. This is attributed to variations in position of Intertropical Convergence Zone, unstable moist air from north penetrating south to a distance governed by pressure over E. Asia and to a less extent N. Australia. Numerous correlation coefficients are given. For similar article see *Nature,* London, 168(4271):428–429, Sept. 8, 1951 (item 3.3–215, March 1952, *MAB*). (*Same item as* 3.8–182, Aug. 1952, *MAB.*) *Subject Headings:* **1. Climatic variations 2. Correlation coefficients 3. Atmospheric circulation 4. Indonesia.**—*C.E.P.B.*

5B–287 551.506.1(593):629.13

*Thailand. Meteorological Dept., **Monthly meteorological summary for aviation.** First issue received, v. 1, Pt. 1, Jan. **1951.** Last issue received, v. 1, Pt. 12, Dec. **1951.** Mostly tables. In English, title-page and introduction in Thai and English. **DWB**—These summaries are prepared

in accordance with the resolutions of CMAé and the Meteorological Division of ICAO. Tables give data for visibility, wind speed and direction and dry bulb and dew point temperatures for Don Maung, Nakhon Rajasima and Songkhla airports. *Subject Headings:* **1. Airways climatic data 2. Monthly data bulletins 3. Thailand.**—*M.L.R.*

5B–288 551.587:551.513.2:551.553.2:551.515.8

Thompson, B. W., **An essay on the general circulation of the atmosphere over southeast Asia and the west Pacific.** *Royal Meteorological Society, Quarterly Journal*, 77(334):569–597, Oct. **1951.** 25 figs., 15 refs. **MH-BH**—An analysis of the daily flow charts and convergence zones for 2000 and 10,000 ft prepared at Hong Kong for area Japan to equator, 100–150°E. Charts for winter (Nov.–March) illustrate usual dominance of Siberian air overlain by upper westerlies, N.E. monsoon surges over China and troughs in the upper westerlies associated with the active upper W. Pacific polar front. May is a complex transition month with new developments in the south. June and July represent the full summer monsoon; discussion includes N. Indian Ocean and equatorial westerlies and equatorial clockwise eddies, the latter forming the ITC front, a new theory of which is presented. In Sept. the polar front moves south again. (*Same item as* 3.8–202, Aug. 1952, *MAB.*) *Subject Headings:* **1. Atmospheric circulation 2. Polar fronts 3. Intertropical convergence zone 4. Southeast Asia 5. West Pacific.**—*C.E.P.B.*

1952

5B–289 551.524.3:551.553(213)

Conrad, Victor, **Temperature, wind direction and speed in the tropics.** *Germany. Deutscher Wetterdienst in der US-Zone, Berichte*, No. 42:3–5, **1952.** 3 tables, 5 refs. German summary p. 3. **DWB**—Observations of wind direction and speed, and their effect on temperature at midnight at Batavia, Java, suggest that in tropics as in temperate regions a secondary periodic wind system may cause small periodic temperature variations. This is attributed to turbulent heat exchange in the vertical. (*Same item as* 4.7–102, July 1953, *MAB.*) *Subject Headings:* **1. Temperature variations 2. Wind variations 3. Batavia, Java.**—*C.E.P.B.*

5B–290 551.521

Dee, R. W. R. and Reesinck, J. J. M., **Global radiation at Djakarta and Bandung.** *Madjalaj Ilmu Alam Untuk Indonesia.* [*Indonesian Journal for Natural Science*], Bandoeng, Java, 108(3/4):94–96, May/Aug. **1952.** graph, 4 refs. **MH-BH**—Values of daily total sun and sky radiation computed by the classical Ångström formula $I = Q[d + (1-d)R]$ are presented in graphical form for Bandoeng and Djakarta (R = relative duration of sunshine, Q = average daily total of global radiation for days with clear sky, d = constant for transparency of clouds). The scale values are computed from daily sunshine duration data of the Royal Magnetical and Meteorological Observatory, Batavia, for the period 1930–1937. In juxtaposition with the two curves a curve of radiation outside the atmosphere is presented for comparison. (*Same item as* 4.8–112, Aug. 1953, *MAB.*) *Subject Headings:* **1. Solar radiation 2. Sky radiation 3. Batavia, Java 4. Bandoeng, Java.**—*G.T.*

5B–291 551.501.81:551.576.11 629.13

Frost, R., **Meteorological report on the Singapore cloud detection trials.** *Great Britain. Meteorological Research Committee, M.R.P.* 757, Sept. 23, **1952.** 16 p. 3 figs., 14 refs., 9 tables. Mimeo. **DWB**—Runs were made towards and through Cu and CuNb by aircraft with 3 cm radar. Heights of Cu giving radar echo 13–33,000 ft many below freezing level; CuNb 29–55,000 ft. At transition level temperature is −30 to −35°C. Mean diameter: visual, 6 miles, radar 4½. Occasions of hail and of snow tabulated; risk of severe icing small. Lightning occurred only with cloud top above 35,000 ft. Up- and down-drafts tabulated; maximum updraft 53 ft/sec. Gust accelerations summarized in relation to position in cloud. Practically all turbulence can be avoided by avoiding radar response areas by a mile. (*Same item as* 4.9–32, Sept. 1953, *MAB.*) *Subject Headings:* **1. Cumulonimbus clouds 2. Radar observations 3. Flight procedure 4. Singapore.**—*C.E.P.B.*

5B–292 551.5:016

†Gleeson, Thomas A., **Bibliography of the meteorology of the Mediterranean, Middle East and South Asia areas.** Florida. State University. Dept. of Meteorology, Contract AF 19(122)-466, Scientific Report No. 1, Appendix, April 1, **1952.** 37 p. **DWB**—A concise cross section through the regional meteorological literature for the Mediterranean Sea, Southern Europe, Northwest Africa, Northeast Africa (including Palestine, Syria, Lebanon!), Southwest Asia, India, Indian Ocean, Burma and Siam based on the main American and British meteorological sources. Some of the references are annotated. (*Same item as* 5.2–20, Feb. 1954, *MAB.*) *Subject Headings:* **1. Meteorological bibliographies 2. Mediterranean area 3. Middle East 4. Africa 5. Southeast Asia. I. Florida. State University. Dept. of Meteorology II. Contract AF 19(122)-466.**—*A.A.*

5B–293 551.557(51)

*Hay, R. F. M., **Wind at high levels over Hong Kong.** *Great Britain. Meteorological Research Committee, M.R.P.* 778, Dec. 4, **1952.** 6 p. 4 figs., 4 tables, 2 refs. Mimeo. **DWB**—Radar and radiosonde winds 1950–51 are tabulated and graphed for 850–60 mb. Daily observations show almost abrupt change from mostly westerlies to easterlies at 100 mb in late May and back in early or mid Oct.; at 150 and 200 mb duration of easterlies is shorter. Extremes were 123 knots from 268° and 78 knots from 40°. (*Same item as* 4E–239, May 1953, *MAB.*) *Subject Headings:* **1. Upper air winds 2. Hong Kong.**—*C.E.P.B.*

5B–294 551.557(59)

*Hay, R. F. M., **Wind at high levels over Singapore (1950–52).** *Great Britain. Meteorological Research Committee, M.R.P.* 770, Nov. 17, **1952.** 6 p. 2 figs., 6 tables, 4 refs. Mimeo. **GB-MO**—Summary of 149 radar observations, 101 above 55,000 ft and 18 above 70,000 ft. Easterlies are found above 25,000 ft very strong (some over 90 knots) in 48,000–54,000 ft. There is a strong shear at about 60,000 ft to SW, sometimes exceeding 10 knots/1000 ft. Tables show vector resultants at each month and height, scalar speeds, highest speeds and corresponding heights, shear values and frequencies integrated through layers. (*Same item as* 4F–101, June 1953, *MAB.*) *Subject Headings:* **1. Upper air winds 2. Singapore.**—*C.E.P.B.*

5B–295 551.577.36

Ma, G., **Frequency distribution of summer rain durations at Hong Kong.** *Hong Kong. Royal Observatory, Technical Notes,* No. 4, signed Jan. 1, **1952.** 2 p. fig. **DWB**—Duration of light rain, heavy rain and combined light and heavy rain cases in 15 minute steps from 15 min to 3 hrs for May–Sept. at Hong Kong (1919–22, 1932–35, 1940–41, 1947–50) were computed from autographic records and are plotted. The 3 curves enable one to estimate the probability of airplane flights being held up for, say, an hour or more by heavy rain (12%) or of light rain occurring for over an hour (30%). Synoptic conditions which could produce rainfall of >2 hours are discussed. *Subject Headings:* **1. Rainfall duration frequencies 2. Hong Kong.**—*M.R.*

5B–296 551.506.1

*Macao. Serviço Meteorológico, **Resultados das observações meteorologicas de Macau.** [Results of meteorological observations at Macao.] Vol. 1, no. 1, Jan. **1952;** last issue received Vol. 1, no. 12, Dec. **1952.** V. 1(13) 1952, annual cumulation, called "Apuramento Anual." Monthly. Mostly tables. Text in Portuguese and English. **DWB**—In addition to the customary tables on meteorological elements obtained in hourly observations (between 6 and 24h) these summaries for the observatory of Macao also include tables of radiation, grass and ground temperatures, actinometric data, state of the ground, evaporation, frequency distribution of wind direction and velocity, specified cloud amount and height, visibility, etc. Data on upper air winds obtained by pilot balloon soundings are also included. *Subject Headings:* **1. Monthly data bulletins 2. Upper air wind data 3. Macao.**—*G.T.*

5B–297 551.582.2(51)

*Peacock, J. E. (*ed.*), **Hong Kong meteorological records and climatological notes, 60 years 1884–1939, 1947–1950.** *Hong Hong. Royal Observatory, Technical Memoir,* No. 5, **1952.** 45 p. charts, diagrs., tables. **DWB**—Unchecked. *Subject Headings:* **1. Climatic data 2. Long period records 3. Hong Kong.**

5B–298 551.577.3

Ramage, C. S., **Variation of rainfall over South China through the wet season.** *American Meteorological Society, Bulletin,* 33(7):308–311, Sept. **1952.** 2 figs., 4 refs. **MH-BH**—The author attempts: 1) to determine whether the secondary minimum in Hong Kong rainfall occurring between July 4 and 15 and revealed in the 5-day means for 60 years occurs elsewhere in South China, 2) to explain the normal march of rainfall over South China during the wet season with the aid of 5-day means and 3) to determine the secular stability of the present rainfall pattern. Five-day means of rainfall for selected stations in South China, smoothed by an overlapping method to eliminate minor deviations, show that a secondary summer minimum of rainfall occurs throughout South China in the wet season. This mid-summer dry spell is explained by the northward advance of the Pacific anticyclone so that the Bai-u stream is intercepted and a high pressure and low rainfall prevail over South China. On the basis of an ancient Chinese farmers' calendar the author maintains that the rainfall pattern of South China has changed little in the past 2000 years. (*Same item as* 4.8–191, Aug. 1953, *MAB.*) *Subject Headings:* **1. Rainfall regime 2. Rainfall variations 3. South China.**—*I.L.D.*

5B–299 551.553.21:551.509.33

Reesinck, J. J. M., **Some remarks on monsoon forecasting for Java.** *Indonesia. Djawatan Meteorologi dan Geofisik, Verhandelingen*, No. 44, **1952.** 22 p. 10 figs., 3 tables, 17 refs. **DWB**—Possible influence of chance correlations in monsoon forecasts is considered and attention drawn to the danger of a formal mathematical system of selection of weather factors to be included in forecast formulae. The forecasting of the beginning of the West monsoon is studied in some detail, also in connection with possible climatic changes. It is suggested that the forecasting should be based almost exclusively on pressure in the Darwin-Kupang region. Calculations on the end of the West monsoon show that probably real correlations exist, but that they are not strong enough and not persistent enough to provide a forecast of practical value. (*Same item as* 4.1–65, Jan. 1953, *MAB.*) *Subject Headings:* **1. Monsoon forecasting 2. Java.**—*Author's summary.*

5B–300 551.553.21

*Schmidt, F. H. and Van der Vicht, J., **East monsoon fluctuation in Java and Madura during the period 1880–1940.** *Indonesia. Djawatan Meteorologi dan Geofisik, Verhandelingen*, No. 43, **1952.** 36 p. 7 figs., 11 tables, diagr. (fold.), refs. p. 36. **DWB**—Mean monthly rainfall data given for selected stations on Java, as well as combined in regions for each month of the period 1915–40. The east monsoon in Java is the driest period of the year (July–Sept.). The end of the transition season was determined by the date when the cumulative rainfall since Sept. 1 reached 350 mm. This amount is necessary to prepare seed beds for rice. In a similar way the beginning of the dry period was computed. Data for these transition periods given for each year, as well as deviations from mean rainfall in July and Aug. Correlation coefficients for seasonal forecasting are computed. *Subject Headings:* **1. Monsoon fluctuations 2. Drought 3. Monsoon forecasting 4. Java 5. Madoera.**—*A.A.*

5B–301 551.577(595, 95) 551.585

*Schmidt, F. H. and Ferguson, J. H. A. (*eds.*), **Rainfall types based on wet and dry period ratios for Indonesia with Western New Guinea.** *Indonesia. Djawatan Meteorologi dan Geofisik, Verhandelingen*, No. 42, **1952.** 77 p. mostly tables, 4 figs., 3 maps (fold.), 7 refs. **DWB**—After reviewing the climate classification systems of KÖPPEN, THORNTHWAITE and MOHR, the authors describe their own climate classification system, which is a modification of MOHR's. The precipitation limits of MOHR ($\leq$60 mm per month—dry, $\leq$100 per month—wet and 10–100 mm per month—moist) are used and the quotient between the mean number of dry and wet months (for a period of 20 years) is determined. Eight types of climates with different values of Q are established. A nomogram for determining the classes is given. Tables are given for every rainfall station giving height, period of record, number of dry and wet months, maximum and frequency of each, Q, Schmidt-Ferguson type, Köppen classification and general mean of rainfall. Maps showing the climatic classification of Java-Madura according to KÖPPEN and rainfall types based upon wet and dry period ratios, and of Indonesia and Western New Guinea, based upon wet and dry period ratios, are included. (*Same item as* 4.10–202, Oct. 1953, *MAB.*) *Subject Headings:* **1. Rainfall data 2. Climatic classifications 3. Indonesia 4. Western New Guinea.**—*I.L.D.*

5B–302 551.577(593)

*Thailand. Meteorological Dept., **Monthly and annual rainfall of Thailand for 1950, 1951.** July 1, **1952.** 2 pieces. mostly tables. t-p. and preface in Thai and English. **DWB**—Includes data for 94 stations, with normals and departures from normal (25–38 years of record) for each month at each station. Data are collected by several services, but are mostly obtained from Negretti and Zembra 8 in. rain gages. (*Same item as* 4.10–203, Oct. 1953, *MAB.*) *Subject Headings:* **1. Precipitation data 2. Thailand I. Bunnag, Charon.**—*M.R.*

5B–303 551.586:582.59

Vacin, Emil F., **Climatological studies of the original habitats of Cymbidiums.** *American Orchid Society, Bulletin*, 21(7):517–532, July 1952. 2 figs., tables, 6 refs. Also: **Growth and flowering of Cymbidiums in their original habitats.** *Ibid.*, 21(8):601–613, Aug. **1952.** 4 figs., 3 refs. Abstracted from reprints. **DWB**—A detailed description of the climatic characteristics in the Cymbidium habitats mainly in India, Burma, Thailand, and French Indochina and climatological data for typical stations within each habitat are given. Monthly absolute temperatures, rainfall (days and inches) and mean relative humidity (9 a.m. and 4 p.m.) for Ranikhet, Kumaon, United Provinces; Darjeeling, Bengal; Cherrapunji, Assam; Chengmai, Thailand; Lashio, Upper Burma; Dalat, Annam; and Hon-Ba, Annam. The Cymbidium habitats are shown on map. The growth and flowering of Cymbidiums in their original habitats are described with reference to prevailing climatic parameters. Abundant supply of water, moderate minimum night temperatures, comparatively high temperatures, narrow diurnal temperature range and exposure to higher light in-

tensities for short periods are climatic features favoring Cymbidium. The growth and development of Cymbidium was studied experimentally under greenhouse conditions and is shown graphically. *Subject Headings:* **1. Climatology 2. Horticulture 3. Orchids 4. Southeast Asia.**—*I.L.D.*

1953

5B–304 551.501.8:551.557.36(51)

*Bell, G. J. and Kwai, Luk-Hung, **Upper winds determined by radar 1949 to 1951.** *Hong Kong. Royal Observatory, Technical Notes*, No. 5, Jan. **1953.** 3 p. 2 refs. **DWB**—Radar reflectors attached to radiosonde balloons were released daily at 8 a.m. local time with a lift of approximately 1200 ft/min. Monthly wind roses given for 11 heights between 1000 and 38,000 ft. For information of airline operators, winds greater than 27 knots at levels of 15,000, 22,000 and 30,000 ft have been further analyzed. Twenty-seven roses given for the additional speed ranges. Roses for June, July and Aug. not included because of the rare occasions of strong winds. Upper westerlies seen to be strongest during Jan., Feb. and March, generally exceeding 27 knots above 15,000 ft and increasing with height. (*Same item as* 4E–251, May 1953, *MAB.*) *Subject Headings:* **1. Upper air wind frequencies 2. Radar wind measurement 3. Jet stream 4. Hong Kong.**—*G.J.E.*

5B–305 551.582(512.6)

*Cabrita, Manuel T. Ferreira (*Macao Met. Serv.*), **O clima de Macau.** [The climate of Macao.] *Macao. Serviço Meteorologico, Notas Científicas*, No. 5:1–21, **1953.** tables. In Portuguese and English. **DWB**—Geographic conditions of the peninsula are briefly summed up. Monthly means of meteorological elements are tabulated on the basis of ground observation records obtained since 1881. Climatic properties are described. Macao is classified among the warm-moderate-damp-rainy climates. According to THORNTHWAITE's classification it is "humid with forest vegetation," according to KÖPPEN it qualifies under type Cwa. *Subject Headings:* **1. Climate of Macao 2. Climatic data 3. Macao.**—*G.T.*

5B–306 551.586:61

Dordick, Isadore L., **Climate and work in Australian New Guinea.** *Acta Tropica*, Basel, 10(3):233–250, **1953.** 3 figs., 9 tables, 15 refs. French and German summaries. Abstracted from reprint. **DLC**—Available data for temperature, vapor pressure and wind speed are summarized, giving annual mean seasonal variation and change with elevation. "Effective temperatures" are computed as an index of the climatic comfort, according to norms, established by the Committee on Atmospheric Comfort of the American Public Health Association. The index varies between 75 and 79° at wind speed of 20 ft/min and between 72 and 76° at 200 ft/min for Lowland New Guinea, compared with the tolerance limit of 85° for heavy work. Therefore an efficient performance of severe physical and complex mental activities can be expected from acclimatized white men. Even more favorable is the climate on the Central Plateau with an elevation of about 5000 ft. (*Same item as* 5.1–4, Jan. 1954, *MAB.*) For a more detailed and comprehensive work by the author on the same area *see* 3.4–238, April 1952, *MAB.* *Subject Headings:* **1. Physiological climatology 2. Bioclimatology 3. New Guinea.**—*A.A.*

5B–307 551.557.2(51, 59)

Hay, R. F. M., **High-level strong easterlies over Singapore and Hong-Kong.** *Weather*, 8(7): 206–208, July **1953.** 2 tables, ref. **MH-BH**—Tables give mean vector winds over Singapore 1950–52 up to 65,000 ft and Hong Kong 1950–51 up to 60 mb with discussion. (*Same item as* 4.11–194, Nov. 1953, *MAB.*) *Subject Headings:* **1. Upper air winds 2. Singapore 3. Hong Kong.**—*C.E.P.B.*

5B–308 551.582.1(265)

Hong Kong. Royal Observatory, **Monthly Weather Summary. Southeast Asia and the Western Pacific.** June **1948**–June **1953. NN**—Brief descriptive summaries for ten-day periods (published monthly) of chief synoptic and weather conditions, typhoons, etc. for that area, containing no tabulated data. *Subject Headings:* **1. Weather reports 2. Southeast Asia 3. West Pacific.**

5B–309 551.513:551.557(54.591)

Koteswaram, P.; Raman, C. R. V. and Parthasarathy, S., **The mean Jet Stream over India and Burma in winter.** *Indian Journal of Meteorology and Geophysics*, 4(2):111–122, April **1953.** 12 figs., 7 tables, 10 refs., eqs. **DWB**—Mean cross section constructed for Dec.–Feb. period using all available radiosonde and sounding balloon data for India, Pakistan and Burma. Mean contours and isotherms given for the 500, 300, 200 and 150 mb levels over the sub-continent for this period. Mean jet of the subtropical type is found to exist at about 27°N and at about 12 km height. Its

properties are compared with the polar front type. No mean jet found at lower latitudes. (*Same item as* 4G–134, July 1953, *MAB.*) *Subject Headings:* **1. Jet stream profiles 2. India 3. Burma.**—*G.J.E.*

5B–310 551.577.37(59)

Palmer, W. G., **Heavy storm at Changi.** *Meteorological Magazine*, London, 82(977):341–342 Nov. **1953.** fig. **MH-BH**—Describes a violent local thunderstorm at Changi, Singapore, on April **20, 1953.** Rain fell at 150 mm/hr for 40 minutes. It occurred at a line of convergence. *Subject Headings:* **1. Excessive rainfall 2. Malaya.**—*C.E.P.B.*

5B–311 551.582.1(923)

Reiner, Ernst, **Ternate–Amboina–Banda–Neira.** *Naturwissenschaftliche Rundschau*, 6(6):238–241, June **1953.** 2 figs., 5 refs. **DWB**—This geographical account of three equatorial islands in the East Indies includes a short section on climate. *Subject Headings:* **1. Local climates 2. Indonesia.**—*C.E.P.B.*

5B–312 551.521.12(595)

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Ramage, C. S., **Relationship of general circulation to normal weather over southern Asia and the western Pacific during the cool season.** *Journal of Meteorology*, 9(6):403–408, Dec. **1952.** 7 figs., 19 refs. **MH-BH**—A jet stream at 500 mb lies S of Himalayas (25–30 N) Oct.–April. Attributed to lifting of air from NW and resulting temperature gradient, and effect of snow cover on insolation. Along this jet, extratropical depressions form and move and cold fronts intensify, and the jet coincides with axis of maximum rainfall. South of jet stream is a zone of subsidence. In 17–24°N, 90–150°E convergence leads to intensified jet, subsidence and drought. The subtropical ridge is displaced northwards. The occurrence of winter cycloes east of Philippines and over SW Bay of Bengal is related to these developments. (*Same item as* 4.6–104, June 1953, *MAB.*) *Subject Headings:* **1. Jet stream 2. Atmospheric disturbances 3. Atmospheric circulation 4. Southeast Asia.**—*C.E.P.B.*

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PART III. METEOROLOGICAL ARTICLES APPEARING IN RECENTLY ISSUED PUBLICATIONS

Note: The contents of periodicals included in this section are for information only, and will not be listed in the monthly indexes until abstracted. When material is furnished in advance of date of publication may be omitted.

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Kitkin, P. A.: **O tsirkuliatsii, vozbuzhdaemoĭ vetrom v more peremennoĭ plotnosti,** [On circulation caused by wind in a sea with variable density], p. 232–251.
Tatarskiĭ, V. I.: **O fliuktuatsiiakh fazy zvuka v turbulentnoĭ srede,** [Fluctuation of sound phase in a turbulent medium], p. 252–258.
Tverskaia, N. P.: **Teplootdacha i isparenie kapli v potoke,** [Heat emission and evaporation of a drop in a current], p. 259–263.
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